Department for Education

PIRLS 2021: National Report for England

Research report

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Executive Summary

About PIRLS

The Progress in International Reading Literacy Study (PIRLS) is an international comparative study directed by the International Association for the Evaluation of Educational Achievement (IEA). The aim of PIRLS is to assess and compare the reading performance of pupils at approximately 10 years of age – that is, in what is internationally considered 'fourth grade', or year 5 in England. A total of 57 education systems took part in PIRLS 2021.

England has taken part in PIRLS cycles every 5 years since 2001, though for PIRLS 2021 this involved a delay to data collection until 2022 due to the impact of the COVID-19 pandemic. In 2021, England's sample consisted of 4,150 year 5 pupils from 162 primary schools.

PIRLS focuses on 3 different aspects of reading literacy – how pupils read different types of texts, what reading comprehension processes pupils use to understand those texts, and what attitudes pupils have towards reading. The first 2 aspects are assessed through a reading literacy test that bears many similarities to the types of comprehension tests that pupils in England sit at school, such as the key stage 2 reading test. Attitudes towards reading are assessed through the use of a questionnaire completed by pupils after finishing their test. Questionnaires are also completed by these pupils' teachers and headteachers, providing additional information about their reading lessons and wider school environments. Most education systems also administer a questionnaire to the parents/guardians of participating pupils for further contextual information on reading-related activities at home, but the home questionnaire was not included in England for PIRLS 2021.

Impact of COVID-19 on PIRLS 2021

The global COVID-19 pandemic had an impact on data collection for PIRLS as well as on normal school operations in England and other education systems internationally. The available data do not allow us to measure that impact in a precise way, which complicates both international comparisons and trends over time for PIRLS in the 2021 cycle.

England and 5 other education systems delayed data collection for 12 months as a result of COVID-19. The majority of participating education systems continued with data collection as originally planned, and others delayed by 6 months but tested older pupils at the beginning of their fifth year of formal schooling. This means that direct statistical comparisons to some education systems are not possible to make in this cycle of PIRLS,

because of the complexities introduced by comparing across different ages of pupils and varying impact of COVID-19. Following the approach used in the PIRLS 2021 International Report, this report will not focus on direct comparisons between England and education systems that delayed participation by 6 months and tested an older cohort of pupils.

Key highlights from PIRLS 2021

England's average score in PIRLS 2021 was 558. This is statistically significantly[1] higher than the International Median score of 520, though not significantly different to England's scores in most previous PIRLS cycles. England's average overall reading performance has not changed significantly compared to most previous PIRLS cycles, including PIRLS 2016. By contrast, most education systems in PIRLS 2021 experienced significant drops in overall performance since 2016, but this may reflect the fact that many systems collected data for PIRLS during the COVID-19 pandemic.

PIRLS uses 4 International Benchmarks (Low, Intermediate, High and Advanced) to describe the reading skills associated with PIRLS scores. Almost all pupils in England (97%) reached at least the Low International Benchmark, compared to an International Median of 94%, while 86% of pupils in England reached the Intermediate Benchmark level compared to an International Median of 75%. **More than half of pupils in England (57%) reached the High International Benchmark in PIRLS 2021, compared to an International Median of 36% reaching this Benchmark**, and 18% of pupils in England reached the Advanced International Benchmark, compared to the International Median of 7%. Between 2011 and 2016 there was a small increase in the percentage of pupils achieving the Low, Intermediate and High Benchmarks in England. Since 2016, performance at each of the International Benchmarks in England has seen no statistically significant changes.

The gender gap in reading performance has reduced over time in England. Girls still outperform boys by 10 points on average in PIRLS 2021, but this is lower than in previous cycles. Between 2001 and 2011 the gender gap remained relatively consistent with a 22-point difference in 2001, 19 points in 2006 and 23 points in 2011. The gender gap then narrowed to a 15-point difference in 2016 and narrowed further to a 10-point difference in 2021.

The gap between the lowest-scoring and highest-scoring pupils in England has also reduced over time. In the long term, looking across all cycles of PIRLS, this seems

[1] Throughout the report, 'significantly' is used to mean 'statistically significantly at least at the level of $p<0.05$'.

to be the result of increases in performance amongst the lowest-attainers, while high-attainers' average score has remained relatively stable.

Fewer pupils in England reported that they enjoy reading than in previous cycles. Across all education systems pupils who like reading achieve higher on average in PIRLS than pupils who do not like reading. Some attitudes towards reading vary by gender in England; a higher proportion of boys do not like reading compared to girls, however, both boys and girls report similar levels of confidence in reading.

In England, most pupils attend schools where teachers and headteachers report high levels of emphasis on academic success; a safe and orderly school environment; and "hardly any" problems with school discipline. Across all participating education systems, high levels of academic emphasis at schools are associated with higher average performance for pupils in PIRLS 2021. There is also a positive association between higher achievement in PIRLS and a safe school climate, and low reports of discipline-related problems.

Almost half of pupils who participated in PIRLS 2021 in England report experiencing bullying at least monthly at school. Across all participating education systems, pupils who report experiencing bullying more frequently had lower average performance in PIRLS 2021.

There is a positive correlation between performance in the year 1 phonics screening check and performance in PIRLS 2021. The overall correlation between year 1 phonics check and PIRLS 2021 was 0.46, indicating a moderate, statistically significant relationship between performance in the 2 assessments. This is similar to the relationship seen between PIRLS and phonics scores in 2016.

Several pupil characteristics significantly predict PIRLS 2021 performance in England based on a multiple linear regression analysis. **The strongest predictor of PIRLS performance was the year 1 phonics check mark**, for which a 1-point increase was associated with nearly a 4-point gain in PIRLS 2021 overall reading performance. Number of books at home was the second most powerful predictor of overall reading score, with higher numbers of books associated with higher PIRLS scores. This was followed by eligibility for free school meals (FSM).

Overall reading performance

Pupils in England achieved an overall average of 558 for PIRLS 2021. Average PIRLS 2021 achievement for England was higher than the International Median of 520. It is important to note that due to disruptions related to the COVID-19 pandemic, 14 participating education systems delayed their data collection timeframe and assessed an older cohort of pupils at the beginning of fifth grade (these education systems are not

included in the calculation of the International Median). Reading achievement in England was higher than 39 of 42 other education systems that assessed pupils at the end of fourth grade (equivalent to year 5 in England). This means that reading achievement for year 5 pupils in England is higher than the international average, and higher than achievement in a majority of participating education systems.

England has participated in PIRLS since 2001 and the average performance of pupils across each cycle of PIRLS has fluctuated somewhat over time. After a decline in performance between 2001 and 2006, average achievement increased steadily until 2016. Between 2016 and 2021, the average reading achievement of year 5 pupils in England has remained stable. The stability of the trend in England between 2016 and 2021 is different to the overall trend internationally over this period. The International Median dropped 19 points between 2016 and 2021, and most education systems scored significantly lower in PIRLS 2021 than they did in PIRLS 2016. It is important to note that England is 1 of 6 other education systems that delayed data collection by a year due to COVID-19 disruptions (these education systems are included in the calculation of the International Median).

Alongside a measure of overall reading achievement, PIRLS also provides information about reading performance for pupils reading for 2 different purposes: Literary and Informational. PIRLS 2021 results reveal that pupils in England perform equally well when reading for Literary purposes and reading for Informational purposes. This is a change from previous cycles where pupils in England typically scored significantly higher on the Literary Scale.

The attainment gap in reading performance

The attainment gap between higher-performing pupils and lower-performing pupils has historically been wider in England than in many other education systems. In 2016 the attainment gap for PIRLS reduced substantially. PIRLS 2021 results show that the gap between the lowest-performing and highest-performing pupils in England has continued to narrow. Long-term trends for England reveal that the narrowing of the attainment gap is due to an increase in the scores of the lower achievers rather than a decrease in the scores of the higher achievers.

Reading performance and prior attainment

The relationship between prior attainment on the year 1 phonics screening check and PIRLS results were first explored in 2016. Similar to what was seen in 2016, there is a moderate correlation of 0.46 between pupils' performance on their year 1 phonic check and their performance in PIRLS 2021. This means that, generally, pupils that performed well in their year 1 phonics check also performed well in PIRLS 2021. Pupils who

achieved 100% for the year 1 phonics check had a median PIRLS score of 605, considerably higher than the average PIRLS score for England of 558. Pupils who just met the expected standard for the year 1 phonics check (i.e., achieved 80%, or 32/40) had a median PIRLS score of at least 521, lower than the average PIRLS score for England but in line with the International Median for PIRLS 2021. Pupils who did not meet the expected standard for the year 1 phonics check (achieved below 80%) had below average achievement in PIRLS 2021.

Pupils who do not meet the expected standard in the year 1 phonic check participate in the year 2 phonics screening check in the next academic year. A similar relationship was found between the year 2 phonics check and PIRLS 2021 scores, where stronger performance in the year 2 phonics screening check was generally associated with stronger performance in PIRLS 2021. Although there was a wide range of performance for pupils who participated in the year 2 phonics check, on average, pupils who just met the expected standard in the year 2 phonics check (achieved 80% or 32/40) still had below-average PIRLS 2021 achievement.

Pupils' attainment in key stage 1 reading assessments also showed a relationship with their PIRLS 2021 achievement. Pupils who were able to read at a 'greater depth' according to their key stage 1 assessments had high achievement in PIRLS 2021, with a median PIRLS score of 612. By contrast, for pupils 'working towards' the expected reading standard in the key stage 1 assessments, their median PIRLS score was 560, roughly in line with England's average score (558) in PIRLS 2021.

Reading performance differences by pupil characteristics

To understand the impact of pupil characteristics on the overall reading performance of pupils in England, information from the National Pupil Database (NPD) was matched with data from PIRLS 2021. We conducted multiple linear regression analysis to understand which of the selected pupil characteristics predicted pupils' reading performance in PIRLS 2021. Of the 9 characteristics considered, pupils' score in the year 1 phonics check was the most powerful predictor of PIRLS 2021 reading scores. Every 1-point increase on the year 1 phonics screening check is associated with almost a 4-point gain in PIRLS. The number of books in the home also had a positive impact on PIRLS 2021 reading scores; pupils who reported having over 200 books at home scored approximately 56 points higher in PIRLS than those who reported having 10 or fewer books at home. Eligibility for FSM within the last 6 years was a strong negative predictor of PIRLS achievement. FSM-eligible pupils scored about 23 points lower than their peers who were not FSM eligible, after accounting for other pupil characteristics and school attainment band.

Being in a mid-high or high performing school, being in the 'Mixed' ethnic group and being born earlier within the school year were also significant positive predictors of PIRLS scores, but not powerful predictors based on their effect sizes (standardized coefficients). After accounting for all other variables mentioned above, gender and English as an Additional Language (EAL) did not significantly predict PIRLS score.

The gap between reading performance of boys and girls in PIRLS is historically wide. In PIRLS 2021, the gender gap is still evident; in all participating education systems girls achieve higher average scores than boys, and in the vast majority of education systems the difference was significant. In England, girls scored, on average, 10 points higher than boys overall. In PIRLS 2011, England had one of the largest gender gaps and the largest gap of any participating European education system. In 2016, this gap narrowed and in 2021 the gap narrowed further. In 2016, the reduction was largely attributable to an average improvement in the performance of boys, up 11 points from 2011. However, in 2021 the narrowing of the gap reflects a decrease of 4 points in the average achievement of girls and a 2-point improvement in boys scores.

Pupils' attitudes towards reading

Pupils that participated in PIRLS 2021 complete both the reading assessment as well as a questionnaire that asks about their attitudes towards reading. Findings from PIRLS 2021 internationally reveal that pupils who enjoy reading have higher average reading achievement. In England, pupils who like reading scored an average of 34 points higher in PIRLS 2021 than those who do not like reading. Internationally 42% of pupils said that they enjoy reading, this compares to 29% of pupils in England who enjoy reading. The proportion of pupils in England reporting that they enjoy reading is lower than in previous cycles. Confidence in reading has one of the strongest associations with reading achievement in PIRLS. In England, there is a 90-point difference between the average PIRLS 2021 scores for pupils who feel very confident in reading and those who do not feel confident in reading. In 2016, just over half (53%) of pupils in England felt very confident in reading, this has decreased slightly in 2021 to 45%.

Gender differences are seen in attitudes towards reading in England, and across most education systems. In England, a similar proportion of girls (46%) and boys (44%) report feeling confident in reading, while the proportion of girls that enjoy reading (32%) is higher than the proportion of boys that enjoy reading (25%).

The relationship between reading attitudes and pupil characteristics such as having more books at home, FSM-eligibility, ethnic group and EAL-status was also considered. Pupils with more books at home also show higher levels of confidence in reading, while pupils who had been eligible for FSM in the past 6 years were less likely to be very confident. Within ethnic groups, higher confidence tended to be associated with higher reading

performance where the number of pupils in the sample were high enough to provide reliable estimates. Pupils with and without EAL did not differ greatly in their confidence in reading, on average, nor in the association between confidence and PIRLS performance.

Teacher and school characteristics

Teachers and headteachers of pupils who participated in PIRLS 2021 completed questionnaires related to their formal training and experience teaching, as well as questions related to the school climate. In England, pupils' teachers report having an average of 11 years teaching experience, lower than the International Median of 18 years. Internationally, a higher proportion (56%) of pupils' teachers reported being very satisfied in their careers than in England (44%). There is no clear relationship between years of teaching experience or career satisfaction and pupils' PIRLS performance, in England or internationally.

Several factors related to school climate showed a strong relationship with pupils' overall achievement in PIRLS 2021. Pupils in schools where teachers report a very high emphasis on academic success achieve higher in PIRLS 2021. In England, pupils' average performance in PIRLS was also positively associated with the school's historic level of performance, with the average pupil at a high-performing school scoring approximately 28 points more than the average pupil at a low-performing school.

Pupils in schools where teachers report very high levels of safety and orderliness achieve higher PIRLS scores than those where lower levels of safety are reported. In England, 67% of pupils' teachers said that their schools were very safe and orderly; this is higher than the International Median of 59%. Headteachers' reports of school discipline also show an association with PIRLS 2021 achievement. Internationally, pupils in schools with hardly any problems with discipline score 30 points higher than those in schools with moderate to severe problems. In England this range is higher; pupils in schools with hardly any problems have an average PIRLS score 50 points higher than those in schools with moderate to severe problems. A majority of pupils in England (76%) attend schools where headteachers report hardly any problems with school discipline; this is higher than the International Median of 62%.

The frequency of bullying experienced by pupils is also associated with average achievement in PIRLS. Generally, pupils who experience bullying more frequently at school have lower average achievement in PIRLS. In PIRLS 2021, the International Median score for pupils who experience bullying weekly is 53 points lower than those who almost never experience bullying. In England, 11% of pupils experience bullying weekly, and their average performance in PIRLS is 50 points lower than those who almost never experience bullying.

Teachers and headteachers also reported on levels of parental commitment and parental support of pupil achievement. Generally, pupils in schools where reports of parental commitment and support are high have higher average achievement in PIRLS 2021. In England, reports of parental commitment and support are lower than international levels.

Educational policy in England and PIRLS

Despite the complexity of drawing relationships between education policy and international large-scale assessments such as PIRLS, there are indications that, overall, the lessons that can be learned from PIRLS 2021 are positive. Evidence from both PIRLS 2016 and PIRLS 2021 suggests that the phonics screening check can be helpful in predicting later reading ability in primary school. Furthermore, the narrowing of the attainment gap in England suggests that efforts to improve the performance of lower-performing pupils and schools are having a positive impact.

1 Introduction to PIRLS

Chapter overview

Chapter 1 provides an overview of PIRLS, with information on what PIRLS assesses, and who participates in PIRLS. It also briefly outlines England's past participation in PIRLS and discusses some of the main findings from previous cycles of the study about how well pupils in England could read. The chapter also includes some more technical discussions about the assessment design used in PIRLS and how the study was administered in schools, with a particular emphasis on the impacts of the COVID-19 pandemic on data collection in England as well as around the world. Next, the chapter moves on to discussing the scoring system used in PIRLS, and the main considerations that readers of this report should keep in mind when interpreting those scores. The chapter concludes by introducing the main comparators whose results are compared with England's, before outlining the content of the remaining chapters of this report.

1.1 What is PIRLS?

The Progress in International Reading Literacy Study (PIRLS) is a large-scale study that provides participating education systems with internationally comparable data on their pupils' performance and attitudes towards reading. PIRLS assesses pupils around the world who have received approximately 4 years of formal primary schooling and are typically around 10 years of age[2] (referred to as 'fourth grade' internationally). The International Association for the Evaluation of Educational Achievement (IEA), the organisation responsible for directing PIRLS, notes that PIRLS assesses pupils of this age group because they are typically transitioning from learning to read towards reading independently for further learning as well as for their own enjoyment (Mullis et al., 2023).

PIRLS was first conducted in 2001 and then every 5 years since. PIRLS 2021 is the fifth cycle of the study, although the data collection period for PIRLS 2021 was substantially longer than planned as a result of COVID-19-related complications (see section **1.2.3** for further details). The assessment design of PIRLS allows for the comparison of results across cycles, allowing education systems to track how their pupils' performance and

[2] In England participating pupils are in year 5, as they start formal schooling earlier than in some other education systems. The average age of pupils in the PIRLS 2021 England sample was 10.3 years. The international average across participating education systems that assessed the originally-planned age group was 10.2 years, and across these education systems average ages ranged from 9.8 to 10.9 years. In education systems that delayed assessment to the beginning of the next school year, the international average age was 10.8 and the average ages across education systems ranged from 10.1 to 11.3 (for more information on the effects of COVID-19 on assessment, including age groups assessed, see section **1.2.3**).

attitudes have changed over time as well as relative to other education systems. Many education systems, including England, use PIRLS data to inform and reflect on educational policies and practices in their own education systems, as well as internationally.

1.1.1 What does PIRLS assess?

PIRLS focuses on 3 different aspects of reading literacy – how pupils read different types of texts, what reading comprehension processes pupils use to understand those texts, and what attitudes pupils have towards reading. The first 2 aspects are assessed through a reading literacy test that bears many similarities to the types of comprehension tests that pupils in England sit at school, such as the key stage 2 reading test. The third aspect is assessed through a questionnaire completed by pupils after finishing their test. Questionnaires are also completed by participating pupils' teachers and headteachers, providing additional contextual information about their reading lessons and wider school environments. Most education systems also administer a questionnaire to the parents/guardians of these pupils for further contextual information on reading-related activities at home. However, the home questionnaire was not administered in England in PIRLS 2021.

Pupils participating in PIRLS answer questions on 2 different texts, each assessing one of the 2 'purposes' for reading. One of the texts is a short fictional story, and the questions assess how well the pupil can read texts with the purpose of providing readers with a 'literary experience'. This text always takes the form of a narrative fiction, rather than other literary forms such as poetry which can be difficult to translate across languages, or forms such as scripts of plays, which are not widely taught in many education systems. The other text is a short non-fiction piece that covers a relatively simple scientific/geographic/historical topic, e.g., "Green Sea Turtles", and assesses how well the pupil can read texts to 'acquire and use information'. Information can be displayed in textual formats but also across tables, charts, and other diagrams.

Some of the questions used in PIRLS are multiple-choice, and others require the pupil to provide a short, written response, though nothing more than a few sentences at most. Additionally, each question in the PIRLS assessment is also categorised as assessing one of 4 main reading comprehension processes. Ordered in increasing complexity, these 4 comprehension processes are:

- **Focusing on, and retrieving explicitly stated information** – pupils need to be able to locate and understand simple information in the text. Usually, the focus is on understanding words or sentences, and questions assessing this comprehension process might ask the pupil to identify the setting of a story, provide a definition of a term, or determine the main idea of the text, if it has already been clearly stated.

- **Making straightforward inferences** – pupils need to be able to establish links between explicitly stated ideas to understand what else the text is communicating. This often relies on a more global understanding of the text, rather than simply understanding the text at the sentence level. Questions in PIRLS assessing this comprehension process might ask pupils to describe the relationships between characters, identify how one event in the story led to another, or conclude the main argument being made.
- **Interpreting and integrating ideas and information** – pupils need to be able to incorporate their own knowledge of the world to form more complete understandings of text. They are also increasingly expected to combine information from different parts of the text to form a more comprehensive overview of the stories and/or arguments being made. Questions assessing this comprehension process might ask pupils to identify the real-world applications of the information presented, to consider the impacts of character's decisions in stories, or to identify the overall tone or mood of the text.
- **Examining and evaluating content, language and textual elements** – pupils need to consider the merits and weaknesses of texts, including the strength of arguments presented, as well as be able to identify the author's perspective from the language and structure of texts. Questions assessing this comprehension process might ask pupils to explain why the author made certain language choices, or what the author's position is on more complex debates. Pupils may also be asked to provide opinions, backing them with reference to the text.

The IEA have published a series of videos showing examples of some of the texts and their questions used in the PIRLS 2021 assessment. "The Amazing Octopus" (https://www.youtube.com/watch?v=5NM3ge6VPko) is an example of an Informational Purpose text with an easy difficulty level, while "The Empty Pot" (https://www.youtube.com/watch?v=eLWzWy1q3rI) is an example of a Literary Purpose text with a medium difficulty level. Note that these videos focus on the digital administration of these texts and their questions, but pupils in England, and in many other participating education systems, administered the tests in paper-based formats. More information on the assessment design used in PIRLS 2021 is provided in section **1.2.1**.

1.1.2 Who participates in PIRLS?

A total of 57 education systems participated in PIRLS 2021, more than in any previous cycle. Table 1 summarises the education systems participating in PIRLS 2021 according to their first year of participation.

Table 1: Education systems participating in PIRLS 2001-2021

Year of first participation	Participating education systems
2001	Bulgaria, Cyprus, Czech Republic, England, France, Germany, Hong Kong SAR (China), Hungary, Iran, Israel, Italy, Latvia, Lithuania, Morocco, Netherlands, North Macedonia, Norway, Russia, Slovak Republic, Slovenia, Sweden, Türkiye, United States
2006	Austria, Belgium (Flemish), Belgium (French), Taiwan, Denmark, Georgia, Poland, Qatar, South Africa, Spain
2011	Australia, Azerbaijan, Croatia, Finland, Ireland, Malta, Northern Ireland, Oman, Portugal, Saudi Arabia, United Arab Emirates
2016	Bahrain, Egypt, Kazakhstan, Macao SAR (China)
2021	Albania, Brazil, Jordan, Kosovo, Montenegro, Serbia, Uzbekistan

Source: IEA's PIRLS 2021

Additionally, PIRLS 2021 includes 8 benchmarking systems. These are typically territories within participating education systems, or cohorts that are older or younger than the main national samples. These include Moscow City in the Russian Federation, both Abu Dhabi and Dubai in the United Arab Emirates, a sixth-grade cohort in South Africa, and 4 Canadian provinces – Alberta, British Columbia, Newfoundland and Labrador, and Quebec.

1.1.3 England's historical participation in PIRLS

England has historically performed well in PIRLS. England's performance in PIRLS 2016 was significantly higher than it had been in both the 2006 and 2011 cycles, and higher (though not statistically significantly[3] so) than in 2001. Only 7 education systems in PIRLS 2016 had average scores significantly higher than England's, with England performing well above the International Median score.

England's reading achievement in early cycles of PIRLS was marked by larger-than-average disparities between the highest-achieving and lowest-achieving pupils compared to some other education systems, particularly in high-performing European nations. Additionally, while female pupils outperform male pupils in the vast majority of education systems and cycles, the gender gap was historically larger in England than in most other education systems, particularly in 2011. These achievement gaps were smaller in the 2016 cycle, and the increase in overall score from 2011 was primarily driven by statistically significant improvements in the performance of lower-achieving pupils, particularly lower-achieving boys. The performance of girls and higher-achieving pupils remained relatively stable over this period.

[3] Throughout this report, 'significantly' is used to mean 'statistically significantly at least at the 95% confidence level.

1.2 Interpreting data from PIRLS: a reader's guide

PIRLS, like similar international assessments such as PIRLS' sister-study, TIMSS (Trends in International Mathematics and Science Study), as well as the OECD's PISA (Programme for International Student Assessment), include highly technical components in the collection of pupil data, the design and administration of assessments, and the ways in which pupils' performance data is used to calculate estimates of their abilities. These differ from more conventional assessments that pupils sit in England, such as key stage 1 and key stage 2 assessments, where all pupils are administered the same test consisting of the same questions, and where average achievement is straightforwardly aggregated from individual achievement. This section briefly outlines the administrative and scoring procedures used in PIRLS. The PIRLS 2021 Methods and Procedures Report provides a more thorough discussion of these procedures, particularly with regards to the statistical procedures used to compare paper-based and digital assessment formats (Von Davier et al., 2023).

1.2.1 PIRLS assessment design

PIRLS 2021 utilised 18 separate assessment passages, with each pupil answering questions on one of the 9 'literary experience' passages, and one of the 9 'acquire and use information' passages. Within these breakdowns, 3 passages were considered 'Difficult', 3 passages were considered 'Medium Difficulty', and 3 passages were considered 'Easy'. While some of the passages are new, the majority of the passages have been used in previous PIRLS cycles and have not been publicly released. This approach of withholding and reusing test questions allows for the linking and calibrating of performance data from PIRLS 2021, including for performance on entirely new passages, to historical data, and allows scores to be calculated on the exact same scale as in previous PIRLS cycles (see section **1.2.4**). This method has been used across all cycles, and this means that despite there being no overlap with questions from the original PIRLS 2001 study, each cycle can link its data back to at least one prior cycle, forming a linkage chain that allows for valid comparisons to the original 2001 performance data.

The 18 assessment passages were distributed across 18 different booklets that paired one 'literary experience' passage with one 'acquire and use information'. Nine of these booklets were classified as 'More Difficult' and contained either 2 'Difficult' passages or one Medium and one Difficult passage. Conversely, the other 9 booklets were classified as 'Less Difficult' because they contained either 2 'Easy' passages or one Medium and one Easy passage. No booklets included one Difficult and one Easy passage.

The proportion of 'More Difficult' and 'Less Difficult' booklets administered in each education system varied based on historic performance in PIRLS. Education systems that have historically done well in PIRLS could choose to randomly assign 70% of the

participating pupils in their education system with a ‘More Difficult’ booklet, and 30% would receive a ‘Less Difficult’ booklet. Conversely, education systems which have typically performed less well in PIRLS could administer 70% of their pupils a ‘Less Difficult’ booklet. The purpose of offering education systems this approach is to ensure that the majority of pupils in that education system are sitting an assessment that is relatively well matched to their ability level. It is important to note here that the booklet design and overlapping use of ‘Medium’ difficulty passages allows for all pupils’ performances to be calculated on the same scale (see section **1.2.4**). As England’s performance in PIRLS 2016 was only slightly above the suggested threshold for administering a higher proportion of ‘More Difficult’ booklets, the decision was made to administer a 50:50 ratio of booklets for this cycle.

In England, all assessments and questionnaires were administered in traditional paper-based formats, as has been the case in all previous PIRLS cycles. However, for the first time, PIRLS 2021 provided participating education systems with the option to administer assessments digitally, with 24 education systems choosing to do so. Statistical procedures have been implemented by IEA to ensure that the data from education systems participating in paper-based and digital assessment formats can be compared on the same performance scale (Bezirhan, Foy & von Davier, 2023).

1.2.2 PIRLS in England: sampling and analysis

Unlike many national assessments in England which are focused on calculating the performance of individuals, the main goal of PIRLS is to understand reading performance at the national level. Given the burden of testing every year 5 pupil, in PIRLS a nationally representative sample of pupils is selected in each education system as is standard practice in international large-scale assessments. The IEA requires that each participating education system has a large enough sample of pupils to provide sufficient statistical power, and to help meet the requirement of national representativeness. However, certain sub-populations may still be over-represented or under-represented in the data after this sampling. To address this, ‘weights’ can be applied to the data at either the pupil, teacher, or school level, to modify how much that data point contributes to the national performance estimates. This method helps to correct for under- or over-representation in the sample.

When determining which primary schools in England would participate in PIRLS 2021, 2 main criteria were used to ensure that the chosen schools were as nationally representative as possible. Firstly, the proportion of different school-types (state-funded, independent schools, and academies) selected matched the proportion of these school-types nationally. Secondly, the selected schools were nationally representative of historical academic performance. This was done by using key stage 2 performance data in the 2018/2019 academic year and ensuring that there was an even distribution of

higher-performing and lower-performing state-schools, again in line with the national distribution of school performance. Additionally, any schools with fewer than 9 pupils in year 5, special schools, schools with alternative provisions, and Pupil Referral Units were all excluded in the school-level sampling. Statistics Canada were responsible for the random selection of schools following these criteria. In total, 169 schools and approximately 4,500 pupils in England were selected for participation in PIRLS 2021. Seven of these schools did not participate in the study for a variety of reasons, leaving 162 schools and a total of 4,150 pupils in England's final PIRLS sample. Appendix A provides further methodological details relevant to PIRLS 2021 in England.

Table 2 shows the numbers and percentages of the pupils in England's PIRLS 2021 sample with respect to the gender, major ethnicity group[4], EAL status and current/historic free school meal (FSM) eligibility status recorded within England's NPD. It also includes information on the number and percentage of pupils in England's PIRLS 2021 sample who attend independent schools, and consequently do not have data within the NPD. It should however be noted that there are also a small number of pupils who do not have complete data within the NPD that attend state-maintained schools or academies (see Appendix B for more information about missing NPD data in the PIRLS sample). The table reports the percentage of pupils with that characteristic both before and after the application of weights, and provides a comparison to the national statistics available for the 2021/2022 year.

Table 2: England's PIRLS 2021 sample characteristics relative to national data

Pupil characteristic	Number of pupils in PIRLS sample (N)	Unweighted % of sample	Weighted % of sample	National figures (%)
Gender – Female	2135	51.5	51.4	* 48.8
Gender – Male	2008	48.5	48.6	* 51.2
Major ethnicity – **White**	2682	71.7	75.2	** 72.6
Major ethnicity – **Black**	203	5.4	4.9	** 5.9
Major ethnicity – **Asian**	551	14.7	12.2	** 12.6
Major ethnicity – **Mixed**	230	6.2	5.9	** 6.7
Major ethnicity – **Other**	73	2.0	1.9	** 2.2

[4] Please note that the categories given here for gender and ethnic group reflect what is recorded in the National Pupil Database (NPD). These categories are in keeping with commonly-used categorisations in UK administrative data, and reflect the information that was available and appropriate to analyse (e.g. not breaking ethnic group into smaller categories that might be disclosive or provide unreliable estimates due to very small sample size), they do not reflect the views of the authors regarding how gender and ethnic identities can or should be represented.

Pupil characteristic	Number of pupils in PIRLS sample (N)	Unweighted % of sample	Weighted % of sample	National figures (%)
Studies English as an Additional Language **(EAL)**	856	22.7	20.0	** 19.5
Eligible for free school meals **(FSM)**	919	24.3	24.0	* 26.0
Has been eligible for free-school-meals at some point in the past 6 years **(Ever6FSM)**	1005	26.6	26.4	* 29.1
Attends an **Independent school**	162	3.9	4.3	** 6.5

Figures may appear inconsistent due to rounding and/or because of missing data.
** National figures based on 2021/2022 school census data for year 5 pupils.*
*** National figures based on 2021/2022 school census data for all year groups. Specific data for year 5 pupils not available.*

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 2 shows that, relative to national figures, England's PIRLS 2021 cohort was highly representative, with most percentages after the application of weights being roughly in line with national averages. Both before and after the weighting of the sample, England's PIRLS 2021 cohort had a slightly lower proportion of pupils who were eligible for FSM than the national average, and slightly fewer pupils coming from independent schools. England's sample for PIRLS 2021 also had a slightly higher proportion of pupils in the 'White' ethnic group than the national average, after the application of weights, as well as a slight over-representation of girls in the sample.

1.2.3 Impacts of COVID-19 on the administration of PIRLS 2021

The disruption to schools that resulted from the COVID-19 pandemic affected the collection of data for the PIRLS 2021 project internationally. Many schools closed for different periods of time during lockdowns or changed how frequently in-person instruction took place at school. This meant that data collection for PIRLS 2021 could not be conducted in some education systems as originally planned. **Table 3** provides a summary of the data collection periods for each education system in PIRLS 2021.

Typically, data collection for a PIRLS cycle takes place between October and November for education systems in the southern hemisphere, and between March and June for education systems in the northern hemisphere. In this way, pupils in their fourth year of

schooling are assessed towards the end of the school year in each hemisphere. For PIRLS 2021, 37 education systems were able to participate in the original timeframe and assessed their fourth-grade cohort at the end of the school year. However, COVID-19 related disruptions led 14 education systems to delay their participation by approximately 6 months meaning they assessed the cohorts at the beginning of the fifth grade, between August and December 2021. Throughout this report, we refer to these education systems as the 'delayed assessment' education systems, and in an approach that is consistent with the PIRLS 2021 International Report (Mullis et al., 2023), we generally report the results of these delayed assessment education systems separately to the other participating education systems. The main reason for this exclusion is because the participating pupils in these education systems were older that the target cohort for the study, and older than previous national samples for those education systems. The testing of older pupils therefore introduces challenges in reporting longitudinal trends in the results for these education systems, and raises questions about the validity of comparisons between the performance of older pupils and those roughly 6 months younger than them.

Where we indicate that results should be interpreted with caution, this often relates to the complications introduced by these complex circumstances due to the impact of the COVID-19 pandemic, as well as to instances in which the data may be less reliable, for example due to small numbers of pupils underlying a particular result. In these instances the results may suggest an indicative pattern at best.

Six education systems, including England, opted to collect their data a year later than their originally planned data collection periods. These education systems, herein described as the 'one year later' education systems, are included in the main comparison tables and figures in both this report as well as the International Report for PIRLS 2021, because the pupils assessed are of the target age of the study. The caveats of this approach are discussed in section **1.2.5**, as well as in relevant sections of this report.

The COVID-19 pandemic also affected the way in which schools were able to administer the PIRLS 2021 assessment. In previous cycles, external administrators visited all participating schools. To reduce the potential for the spread of COVID-19, schools in participating education systems were offered the option of administering the test using internal staff. In England, approximately two-thirds of schools opted to self-administer in this cycle, while the rest opted to invite a test administrator. If schools selected the self-administering option, teachers and/or school leaders attended remote training sessions to train as administrators for PIRLS 2021 for their schools. The quality of the administration of the PIRLS tests was evaluated by both a national and international quality control monitor, each of whom attended 10% of the data collection days in schools. Both self-administering and external-administering schools were included in these quality control evaluations.

Table 3: Comparison of data collection periods in PIRLS 2021

Data collection period	Cohort	Participating education systems
Original assessment period	2020-21 fourth-grade cohort assessed at end of 2020-21 school year	Albania, Austria, Azerbaijan, Belgium (French), Belgium (Flemish), Bulgaria, Cyprus, Czech Republic, Denmark, Egypt, Finland, France, Germany, Hong Kong SAR (China), Italy, Jordan, Kosovo, Macao SAR (China), Malta, Montenegro, Netherlands, New Zealand, North Macedonia, Norway, Oman, Poland, Portugal, Russia, Serbia, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Taiwan, Türkiye, and Uzbekistan. Benchmarking participants Alberta, Canada British Columbia, Canada Newfoundland & Labrador, Canada Moscow City, Russian Federation
Delayed assessment (beginning of fifth grade)	2020-21 fourth-grade cohort assessed at beginning 2021-22 school year	Bahrain, Croatia, Georgia, Hungary, Ireland, Kazakhstan, Latvia, Lithuania, Morocco, Northern Ireland, Qatar, Saudi Arabia, United Arab Emirates, United States. Benchmarking participants Quebec, Canada Abu Dhabi, UAE Dubai, UAE
Assessed one year later	2021-22 fourth-grade cohort assessed at end of 2021-22 school year	Australia, Brazil, England, Iran, Israel, South Africa Benchmarking participants South Africa (6th grade)

Source: IEA's PIRLS 2021

Despite the numerous challenges associated with the COVID-19 pandemic, 162 schools in England participated in this cycle and recruitment rates were not substantially affected. Both internationally and nationally, every effort was made to ensure that the quality and comparability of PIRLS data was maintained throughout the 2021 cycle.

1.2.4 PIRLS scale

The PIRLS scale was developed to score education systems that participated in the original PIRLS study in 2001 and set a score of 500 to reflect the mean-level performance of these education systems, with a standard deviation of 100 points. This

scaling has been maintained across cycles to allow for the calculations of trends in performance. As discussed in section **1.2.1**, the assessment design of PIRLS involves the retention of some assessment passages and their associated test-items across cycles. This, combined with the booklet structure that combines old passages with new passages, allows for every pupil's performance, regardless of the exact combination of questions they answered, to be equated on the PIRLS scale.

PIRLS also provides 4 International Benchmarks (Low, Intermediate, High, and Advanced), set at corresponding scores on the PIRLS scale, to describe the different reading comprehension skills and competencies associated with those scores. These benchmarks are outlined in greater detail in section **2.3**.

The IEA calculates individual pupils' PIRLS scale scores by employing approaches from a branch of statistics known as 'Item Response Theory'. This includes a method that looks at a pupil's pattern of correct and incorrect responses on each of the questions that they answered to estimate a probability that the pupil would get each of the questions in the other 16 assessment passages correct. This method, known as 'imputation' is used to produce a collective body of both real and estimated performance data for every question used in PIRLS 2021, and from that, an overall score known as a 'plausible value' is calculated. This approach is repeated for each pupil 5 times, which produces slightly different patterns of correct and incorrect responses to the imputed test questions, and as a result, this method calculates 5 different plausible values for each pupils' overall performance.

This approach is argued to produce much more accurate estimates of population-level performance than assessments where examinees only provide responses to a relatively small set of questions. However, this approach is not designed to produce accurate estimates of the performance of individual pupils. This also means that estimates of the performance of small sub-populations can also have high levels of statistical error.

1.2.5 Factors to consider when interpreting PIRLS data

The complex nature of PIRLS always introduces caveats when interpreting the data. The additional considerations raised by delays in data collection arising from the COVID-19 pandemic, as well as changes in how the PIRLS assessments were administered in some education systems, mean there are additional complications when interpreting the results. Some of the main factors to consider when interpreting the results in this report are as follows:

- **Changes in score cannot be directly attributed to the COVID-19 pandemic.** While it is reasonable to assume that the COVID-19 pandemic impacted schools and pupils, and may have had specific impacts on pupils' reading education, it is

important to note that any significant changes in PIRLS scores cannot be causally attributed to this, a specific reading policy or practice, or any other factor.

- **England's data was collected 12 months after most other education systems.** Consistent with the approach used in the International Report, England's data is compared to that of other participating education systems, despite England's data being collected 12 months later than most other education systems. Every education system's data was collected during periods of substantial educational disruption, but it should not be assumed that this disruption was equal across education systems, or across time. England opted to collect data 12 months later than originally planned because of this disruption and the additional burdens that would be placed on schools had they collected data at the originally planned time. We cannot determine how England may have performed had they collected their data at the originally planned time, nor how other education systems may have performed had they also opted to wait 12 months. As such, while England's data is presented with and compared against that of other education systems, the different timing of data collection as well as differences across contexts in the extent of disruption caused by the COVID-19 pandemic should be remembered when interpreting findings and trends in results between PIRLS 2021 and those of previous PIRLS cycles.
- **Comparisons of England's scores with international mean results may not be as informative as comparisons with the International Median.** Consistent with the approach used in England's National Report for PIRLS 2016 (McGrane et al., 2017), we have opted to refer to the International Median as opposed to the approach used in the IEA's International Report, which typically focuses on mean results and the PIRLS Scale Centrepoint, the mean result of participating education systems in PIRLS 2001. This is because the distribution of performance scores in PIRLS are not symmetrical around the mean / PIRLS Scale Centrepoint, primarily due to a number of education systems performing at the lower end of the PIRLS scale that have a disproportionately negative effect on the mean. The International Median score is less affected by the skew produced by these education systems and is more representative of the average performance of education systems that are similar to England. When determining the International Median, the 14 delayed assessment education systems (as reported in **Table 3**) as well as all benchmarking participants, are not included.
- **It is important to consider sources of error and statistical significance when comparing 2 or more estimates.** The term 'significant' is used throughout this report to indicate where the difference between 2 results represents a statistically significant difference. PIRLS calculates estimates of performance, and these estimates have a level of uncertainty in them that we refer to as 'error'. This includes many different potential sources of error. For example, as described in

section **1.2.4**, there is a lot of uncertainty in individual pupils' plausible value estimates, and this is a potential source of 'measurement error'. Another source of error can be in the sampling of schools – it is possible that the randomly selected pupils are not actually representative of the education system's population of pupils, and this might mean that the estimate of the education system's score is higher or lower than what the 'real' score for that education system would be if every pupil had been assessed – this can be considered 'sampling error'. When the difference between 2 results is reported to be statistically significant, it is accounting for the estimated level of error in those results, and these error estimates can be quite large when looking at smaller groups. All statistically significant results in this report are significant at the 95% confidence level.

- **Small sub-populations of pupils may be over or under-represented in the data.** Section **1.2.2** outlined England's sampling design for PIRLS 2021. However, it is important to remember that small groups within the population, particularly relating to different major ethnicity groups as reported in the NPD, can still be over or under-represented even after using appropriate statistical methods to account for the design. It is also important to remember that the procedures for imputing data (discussed in section **1.2.4**) are designed to produce accurate estimates of performance of large groups (e.g., education systems' overall results), but are not well suited for estimating the performance of individuals or small groups (e.g., by ethnicity).
- **Passages and questions in the assessments may not be equally difficult for pupils from different socio-cultural or language backgrounds.** While the IEA conduct thorough piloting of potential test-items to ensure that questions are fair and appropriate for pupils from different cultural backgrounds, some critics of PIRLS have suggested that many of the test questions are not equally challenging for pupils across different education systems and languages, even when these pupils are estimated to have very similar levels of overall reading comprehension (e.g., Grisay, Gonzalez & Monseur, 2009; Sandilands, Oliveri, Zumbo & Ercikan, 2013; Goodrich & Ercikan, 2019). These concerns can be further exacerbated by the fact that many pupils sit translated versions of these test-items, and these can make questions inadvertently more or less difficult than they are in English. It is therefore advised that readers adopt a healthy level of caution in comparing across education systems, particularly when comparing across different curricula, cultures and languages. Appendix C provides details about the language of the test in all participating education systems for PIRLS 2021.
- **Trend results across PIRLS cycles assume that the difficulty of questions remains the same over time.** We have previously discussed the use of passages from previous cycles that allows the results from PIRLS 2021 to be 'equated', which allows for comparability with results from all previous cycles. However, the

statistical methods that enable scores from every cycle to be compared relies on the assumption that the questions that are re-used (otherwise known as the 'common items') remain equally difficult across time. For similar reasons to the point above about relative difficulty across socio-cultural and language backgrounds, it may be that the content of passages becomes more or less accessible or familiar over time and this affects how pupils are able to engage with the questions about them. While the impact of this is probably small, this potential issue should be kept in mind when drawing comparisons over time.

1.2.6 Comparator selection

This report focuses on England's performance in PIRLS 2021 and compares this to England's performance in previous PIRLS cycles, as well as to other education systems around the world. A group of 'comparators' has been selected as the main focus of these international comparisons and is referred to throughout the report. The 4 main considerations for selecting comparator systems were as follows:

- **Administered PIRLS to a similarly aged-cohort:** as discussed in section **1.2.3**, the COVID-19 pandemic caused a number of delays in the collection of data for PIRLS 2021, and this resulted in some education systems opting to assess pupils in the beginning of the fifth grade instead. These delayed assessment education systems have therefore assessed pupils who are approximately 6 months older than planned. Following the approach used in the PIRLS 2021 International Report, this report will not focus on direct comparisons between England and these education systems.
- **English is the first language for most people in the education system:** These education systems completed identical tests to England and tend to be culturally similar to England. However, many of these education systems, including Ireland, Northern Ireland, and the United States, are among the 14 delayed assessment education systems, and are consequently not included because they tested older cohorts.
- **Among the top-performing education systems in PIRLS 2021:** We include a selection of high-performing education systems on the basis that there may be lessons learned through these comparisons.
- **Has participated in at least 2 other comparable PIRLS cycles:** Being able to compare trends over time was a priority in the selection of focal comparators, so only those education systems that had participated in PIRLS for at least 2 previous comparable cycles (2011, 2016) were included.

With these considerations in mind, 3 main comparators were selected for use throughout the report, though comparisons to other education systems' results may be made where appropriate.

- **Singapore:** has been a consistently high performer in PIRLS since the 2006 cycle, and administers the study in English. Singapore was the top-performing education system in PIRLS 2011, and has improved on their overall performance in every successive cycle of the study. Singapore has also had a wide distribution of performance, similar to England.
- **Hong Kong SAR (China):** has also been selected because of its history of strong performance in PIRLS, including being the top-performing education system in PIRLS 2006. Hong Kong administers the test in Chinese, and compared to Singapore, has had a narrower range of performance, with fewer pupils at the very top of the end of the PIRLS scale, but also fewer pupils at the lower end.
- **Australia:** has been selected because of its cultural and linguistic similarities to England. Australia joined PIRLS in 2011 and had a statistically significant increase in performance between 2011 and 2016. Australia performed significantly lower than England in PIRLS 2016, but higher than the International Median score and significantly higher than New Zealand, the other most culturally and linguistically similar education system to England with comparable data. Australia also collected data on a similar timeline to England for PIRLS 2021 (i.e., both delayed data collection by 12 months due to the impact of the global COVID-19 pandemic).

1.3 Overview of the report structure

The rest of this report is divided into 9 main chapters. Chapters 2-8 focus on performance in PIRLS 2021 with respect to a variety of factors of interest. Chapters 9 and 10 provide deeper discussion of the changing educational context in England since the last PIRLS cycle with respect to the COVID-19 pandemic and educational policy more broadly.

The chapter-by-chapter summary is as follows:

- **Chapter 2** focuses **on overall reading performance**. This includes a comparison of performance across every education system that participated in PIRLS 2021. The chapter then assesses England's performance relative to the results in previous cycles as well as to the selected comparator systems, before discussing England's performance with respect to the 4 International Benchmarks.
- **Chapter 3** looks at performance on the different subscales for **reading purposes and comprehension processes**. First, it presents performance in PIRLS 2021 on the Literary and Informational Purpose Scales, and on the 2 main Comprehension Scales – Retrieving and Straightforward Inferencing, and Interpreting, Integrating and Evaluating. England's performance on these scales is assessed in relation to those of the comparators and to England's previous performance on these scales.
- **Chapter 4** examines the **performance of higher- and lower-performing pupils**. Comparisons are drawn between the highest-performing (90th percentile) and

lowest-performing (10th percentile) pupils in England and in comparator systems, and with a particular focus on how any changes in England's overall performance since 2016 is reflected in the results for these higher- and lower-performing groups.

- **Chapter 5** conducts a deeper dive into England's performance in PIRLS 2021 using **prior attainment** data. In particular, this chapter focuses on relationships between pupils' performance in PIRLS and their previous performances in their year 1 and year 2 phonics screening checks, as well as in how their reading was assessed by their teachers at the end of key stage 1.
- **Chapter 6** focuses on **performance by pupils' characteristics**, including both analyses using data from the PIRLS 2021 pupil questionnaires, and for pupils in England, using data from the NPD. The chapter identifies whether and which pupil background characteristics (e.g., gender, ethnicity, EAL-status, free school meal eligibility) are independently and significantly associated with PIRLS performance. Additional contextual factors are also considered in this analysis, including the type of school a pupil attends, home possessions, and access to different resources at home (from PIRLS pupil questionnaire data). Each significant factor is then examined more closely.
- **Chapter 7** focuses on **pupils' attitudes and motivations towards reading**, with a particular emphasis on their self-perceived engagement in reading lessons as well as their confidence in and enjoyment of reading. The chapter also explores how these relate to performance in PIRLS, including breakdowns by pupil gender and for higher-performing and lower-performing pupils.
- **Chapter 8** looks at how **characteristics of schools, teachers, and their teaching practices** relate to PIRLS performance. The chapter covers a wide range of topics based on data from teacher and headteacher questionnaires, including teachers' qualifications and career satisfaction as well as schools' emphasis on academic success, safety and discipline. The chapter concludes with a look at both teachers' and headteachers' perceptions of parental involvement in the school and in their child's reading education.
- **Chapter 9** provides a deeper discussion of the **impacts of the COVID-19 pandemic**, both on reading education within primary schools in England and on the collection of data for PIRLS 2021. The chapter also looks at questionnaire data from headteachers on how their schools operated during the pandemic. Finally, the chapter discusses global trends in performance in PIRLS 2021 with respect to the previous trajectories of results and how these differ from what might have been expected prior to the pandemic.
- **Chapter 10** concludes with a discussion of **educational policy in England**, including how specific knowledge and skill topics within the key stage 1 and key

stage 2 curricula map on to the PIRLS Benchmarks. The chapter also discusses national assessments of reading in England, including the year 1 phonics screening check, reading initiatives in England, and policies aimed at reducing attainment gaps between pupils from advantaged and disadvantaged backgrounds as well as between boys and girls.

2 Reading performance

Chapter overview

Chapter 2 provides an overview of the overall reading performance for pupils in PIRLS 2021. The chapter begins with a description of England's overall performance in PIRLS 2021, then compares England's overall performance with that of comparator systems. It discusses changes in England's reading performance over time, including details of performance trends for both England and the comparator systems across the PIRLS cycles for which data are available. The chapter concludes with a discussion of England's performance – and that of comparator systems – relative to the 4 International Benchmarks.

Key findings

- England's average score of 558 is significantly above the International Median of 520. This score is not significantly different to England's scores in most previous PIRLS cycles, including PIRLS 2016. By contrast, most education systems in PIRLS 2021 experienced significant drops in overall performance since 2016, but this may reflect the fact that many systems collected data for PIRLS during the COVID-19 pandemic.
- There have been no statistically significant changes since 2016 in the percentages of pupils in England performing at each of the International Benchmarks.

2.1 Overall reading performance

In PIRLS 2021, England's overall score is 558. This compares to an International Median score of 520. This International Median score was calculated as the median score of the 43 education systems that tested similarly-aged pupils to previous cycles, but does not include the 14 'delayed assessment' education systems that tested pupils that were roughly 6 months older than the pupils they would normally assess. A more detailed discussion of the delayed assessment systems and why their results are interpreted separately can be found in section **1.2.3**. England's score of 558 is significantly higher than the International Median score, and significantly higher than 39 of the 42 other systems that assessed pupils at the same age. The remaining 3 education systems all scored significantly higher than England.

Table 4 shows the performance of every education system relative to England, broken down into 3 groups:

- Education systems that scored significantly higher than England in PIRLS 2021.
- Education systems that scored similarly to or higher than England in the previous cycle of PIRLS, but significantly lower than England in PIRLS 2021.
- Every other education system that scored significantly below England but above the International Median score of 520.

Table 4: Performance of education systems in PIRLS 2021 relative to England

Performance	Education system
Scored significantly higher than England in PIRLS 2021	Singapore (587) Hong Kong SAR (573) Russia (567)
Scored similarly or significantly higher than England in PIRLS 2016 but significantly lower in PIRLS 2021	Finland (549) Poland (549) Taiwan (544) Sweden (544) Bulgaria (540) Norway (539)
Scored significantly lower than England in PIRLS 2021	Australia (540) Czech Republic (540) Denmark (539) Italy (537) Macao SAR (536) Austria (530) Slovak Republic (529) Netherlands (527) Germany (524) New Zealand (521) Spain (521) Portugal (520) Slovenia (520) **+20 other education systems below the International Median of 520**

Overall scores in parentheses.

Source: IEA's PIRLS 2021

It is important to reiterate that England's data was collected 12 months later than originally planned, later than most participating systems (see **Table 3** in section **1.2.3**) for more details on the effect of the COVID-19 pandemic on PIRLS 2021 data collection. While PIRLS cannot attribute increases or drops in score to any individual factor(s), it is important to consider that most systems collected their data during periods of substantial education disruption caused by the COVID-19 pandemic, and that comparisons between England and systems that collected their data earlier must therefore be interpreted with caution.

England did test pupils of the same age as originally planned (an average age of 10.3 years), and consequently the PIRLS 2021 International Report includes England's results in the main tables of comparisons with other systems that did the same (Mullis et al., 2023). For consistency with the International Report, this National Report for England includes such comparisons, but we strongly encourage readers to bear the differences in data collection periods in mind when interpreting any differences in performance between England and other education systems in PIRLS 2021.

Singapore was the highest performing system in PIRLS 2021 with an average score of 587. This is significantly higher than all other participating systems. Hong Kong and Russia both scored significantly higher than England, but not significantly differently to one another. While trend results are elaborated on in greater detail in section **2.2**, Finland and Poland (both of which collected data when originally planned) both scored significantly higher than England in PIRLS 2016 but significantly lower in PIRLS 2021. Similarly, Taiwan, Sweden, Bulgaria and Norway (all of which collected data according to the original timeline) did not score significantly differently to England in PIRLS 2016, but scored significantly lower than England in PIRLS 2021. Every other system that participated in PIRLS 2021 scored significantly lower than England.

As discussed previously, 14 education systems opted to delay the assessment of pupils in their schools by approximately 6 months because of challenges to data collection brought on by the COVID-19 pandemic. In each of these education systems, the pupils included in the assessment were therefore older than the usual samples for those systems in PIRLS, and this has raised challenges in comparing across systems, as well as longitudinally within those systems. Consistent with the approach used in the PIRLS 2021 International Report, the results of these education systems are not included in the calculation of International Medians (Mullis et al., 2023), and we typically report the results of these education systems separately.

Table 5 shows the performance of these education systems relative to England, but it is important to note that these comparisons do not report whether the differences in scores are statistically significant, because direct statistical comparisons would not be appropriate considering the complexity of differences in circumstances between delayed-assessment systems and England: Different age groups, different timing of data collection, and potentially different impact of the COVID-19 pandemic on normal school operations which cannot be measured and accounted for statistically.

Table 5: Performance of delayed-assessment education systems in PIRLS 2021 relative to England

Performance	Education system
Education systems with scores higher than England in PIRLS 2021	Ireland (577) Northern Ireland (566)
Education systems with lower scores than England in PIRLS 2021	Croatia (557) Lithuania (552) United States (548) Hungary (539) Latvia (528) **+7 other education systems below the International Median of 520**

Statistical significance is not reported for education systems with delayed assessment.
Overall scores in parentheses.

Source: IEA's PIRLS 2021

Table 6 shows the performance of the 15 highest-scoring education systems in PIRLS 2021, including the higher-performing systems with delayed assessment. For contextual information, the average age of the participating pupils in each system are listed.

Table 6: Overall scores of top 15 performing systems in PIRLS 2021, including systems with delayed assessment

Education system	PIRLS Score	Average pupil age	Data collection period
Singapore	587	10.4	Original
Ireland	*577*	*11.0*	*Delayed*
Hong Kong SAR	573	10.1	Original
Russia	567	10.8	Original
Northern Ireland	*566*	*10.8*	*Delayed*
England	558	10.3	One year later
Croatia	*557*	*11.2*	*Delayed*
Lithuania	*552*	*11.3*	*Delayed*
Finland	549	10.8	Original
Poland	549	10.9	Original
United States	*548*	*10.7*	*Delayed*
Taiwan	544	10.1	Original
Sweden	544	10.7	Original
Australia	540	10.0	One year later
Bulgaria	540	10.7	Original

***Original** = assessed pupils at the originally planned time. **Delayed** = delayed assessment by approximately 6 months (tested older pupils). **One year later** = assessed pupils approximately one year later than planned (same aged pupils assessed as originally planned).*

Source: IEA's PIRLS 2021

2.2 Trends in overall reading performance

England's score of 558 in PIRLS 2021 is not significantly different from England's score of 559 in PIRLS 2016. However, most education systems that participated in both PIRLS 2016 and PIRLS 2021 have experienced statistically significant drops in overall reading performance. This is reflected in a 19 point reduction in the International Median score from PIRLS 2016 to PIRLS 2021.

Table 7 summarises each system's change in performance in PIRLS 2021 relative to 2016. Only 3 systems – Egypt, Oman, and the highest performing system in PIRLS 2021, Singapore – have seen a statistically significant increase in performance since the previous cycle. By contrast, 21 systems experienced statistically significant drops in performance since 2016. England was one of 8 education systems without any statistically significant changes in overall performance.

Table 7: Statistically significant changes in overall PIRLS score from 2016 to 2021

Performance	Education system
Scored significantly higher in PIRLS 2021 than in PIRLS 2016	Egypt (+48) Oman (+11) Singapore (+11)
No statistically significant change between PIRLS 2016 and PIRLS 2021	Australia Belgium (French) Czech Republic England France Hong Kong SAR New Zealand Slovak Republic
Scored significantly lower in PIRLS 2021 than in PIRLS 2016	Austria (-11) Azerbaijan (-32) Belgium (Flemish) (-14) Bulgaria (-12) Denmark (-8) Finland (-17) Germany (-13) Iran (-15) Israel (-20) Italy (-11) Macao SAR (-10) Netherlands (-18) Norway (-20) Poland (-16) Portugal (-8) Russia (-14) Slovenia (-23) South Africa (-31) Spain (-7) Sweden (-12) Taiwan (-15)

Significant changes in score from PIRLS 2016 to PIRLS 2021 shown in parentheses.

Source: IEA's PIRLS 2021

Table 8 outlines the statistically significant changes in overall performance of thirteen of the fourteen systems with delayed assessment. Far fewer of these education systems saw statistically significant drops in performance, though it should be reiterated that these systems tested older pupil cohorts than usual, and as such, more caution should be applied when interpreting longitudinal trends. Croatia, the remaining education system

with delayed assessment, did not participate in PIRLS 2016. Croatia's overall score, however, was not significantly different to their score from PIRLS 2011.

Table 8: Statistically significant changes in overall PIRLS score from PIRLS 2016 to PIRLS 2021 for education systems with delayed assessment

Performance	Education system
Scored significantly higher in PIRLS 2021 than in PIRLS 2016	Bahrain (+12) Ireland (+11) Morocco (+15) Qatar (+42) Saudi Arabia (+18) United Arab Emirates (+33)
No statistically significant change between PIRLS 2016 and PIRLS 2021	Georgia Lithuania Northern Ireland United States
Scored significantly lower in PIRLS 2021 than in PIRLS 2016	Hungary (-15) Kazakhstan (-32) Latvia (-30)

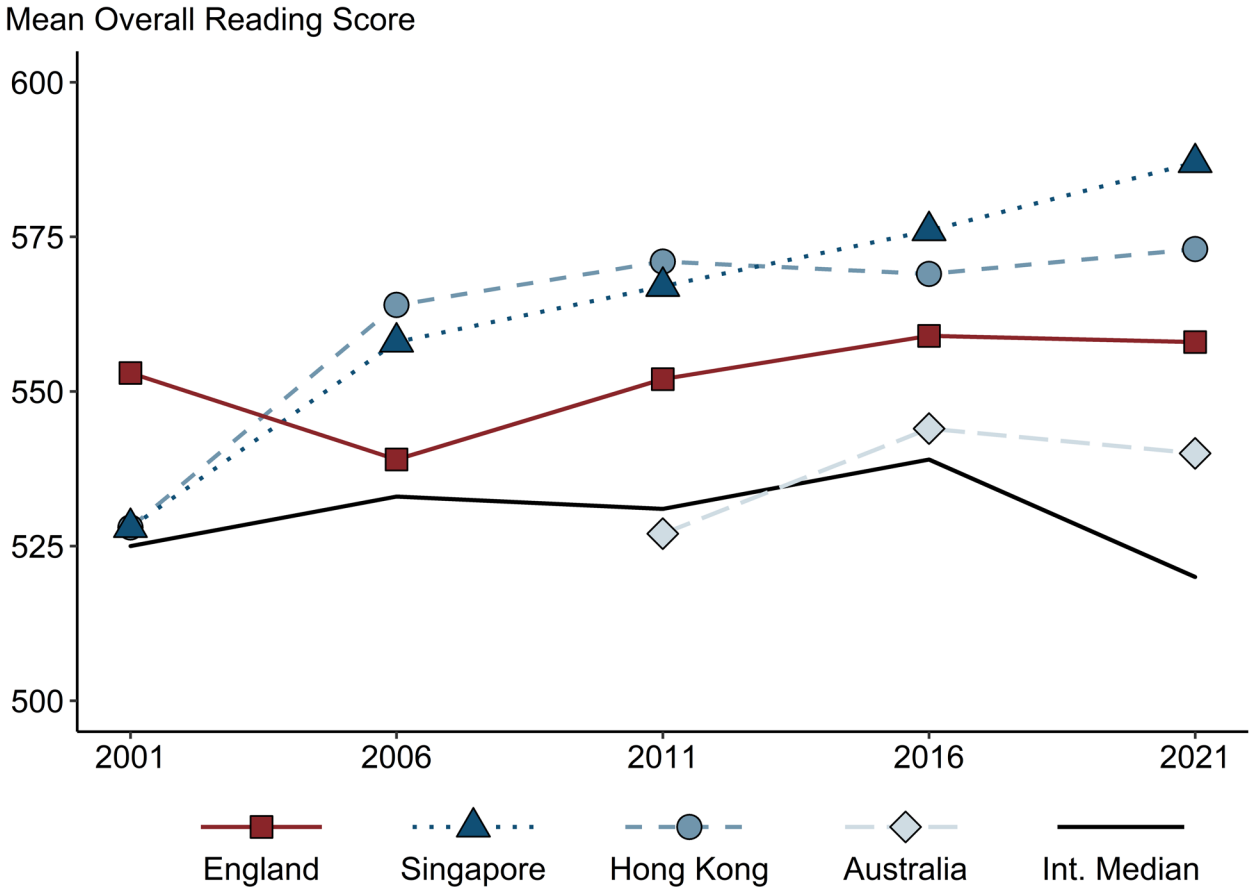
Source: IEA's PIRLS 2021

Comparing across all 5 cycles of PIRLS, England's overall score of 558 in PIRLS 2021 is significantly higher than England's score of 539 in PIRLS 2006, but not significantly different from performance in the 2001, 2011, and 2016 cycles. This means that any differences in England's overall performance scores between PIRLS 2021 and these 3 cycles should be interpreted with caution. **Figure 1** shows England's trend in overall PIRLS performance across PIRLS cycles relative to the comparator systems (Singapore, Hong Kong, and Australia) and the International Median.

Both Singapore and Hong Kong scored similarly to the International Median in 2001, but experienced sharp increases in performance between 2001 and 2006. Singapore, the top-performing education system in PIRLS 2021, scored significantly higher than every other system, as well as significantly higher than its own scores across all previous cycles. Hong Kong, the top performing education system in the 2011 cycle of the study, recorded their highest score to date in PIRLS 2021, but this does not represent a statistically significant improvement from 2011 or 2016.

Australia, who joined PIRLS in the 2011 cycle, saw statistically significant improvement from 2011 to 2016. The 4 point drop between PIRLS 2016 and PIRLS 2021 is not statistically significant. Note that Australia, like England, opted to collect their data 12 months later than originally planned for PIRLS 2021, and as such, the trend between the 2016 and 2021 cycles represents a 6 year trend rather than 5.

Figure 1: Performance of England and comparator systems across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	553	*539	552	559	558
Singapore	*528	*558	*567	*576	587
Hong Kong SAR	*528	*564	571	569	573
Australia	n/a	n/a	*527	544	540
International Median	525	533	531	539	520

Asterisks (*) indicate that the score shown is significantly different to that system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

The International Median score in PIRLS 2021 is 520, lower than in any previous PIRLS cycle. The 14 education systems with delayed assessment were not included in this calculation. However, given that 7 of these systems scored above 520 and the other 7 scored below 520, their inclusion would not have changed the International Median score. However, it should be noted that all 7 of the systems that debuted in PIRLS 2021 (see section **1.1.2**) performed below the International Median, and this does have a small negative effect on the Median. Nonetheless, this alone does not account for the 19 point drop in the International Median, which reflects the overall trend of most systems scoring significantly lower in PIRLS 2021 than in PIRLS 2016.

2.3 Overall performance according to International Benchmarks

As discussed in section **1.2.4,** PIRLS uses 4 International Benchmarks to describe the reading skills associated with scores on the PIRLS scale. These benchmarks and their associated scores are outlined in **Table 9**.

Table 9: Overview of PIRLS 2021 International Benchmark criteria and scale scores

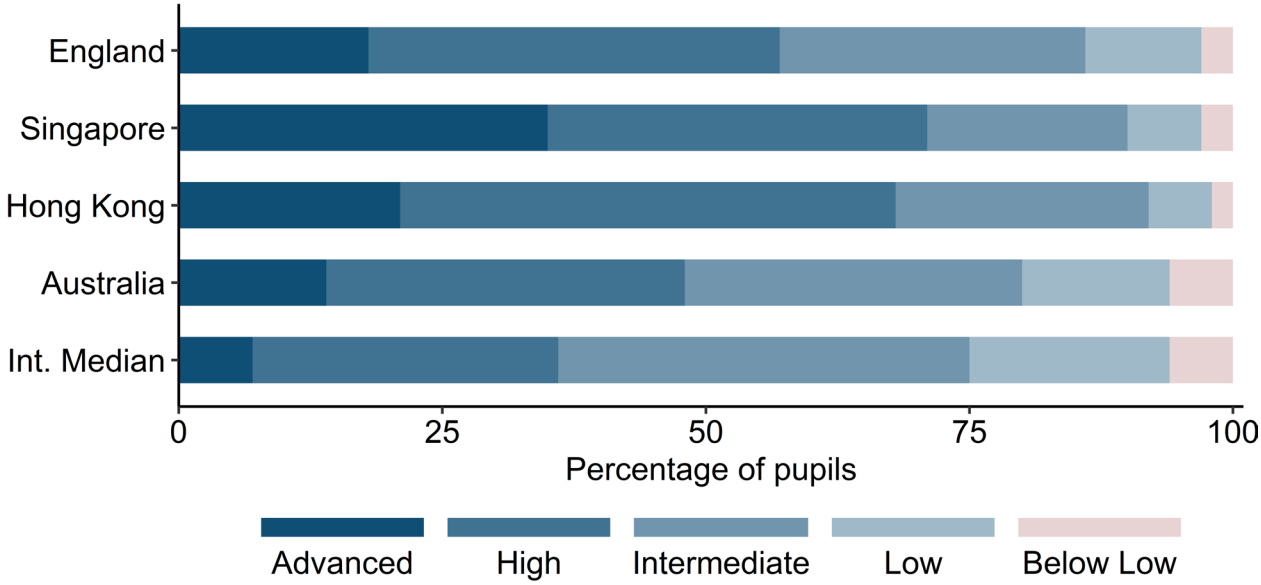
Benchmark	Score	Description
Low International Benchmark	400	Pupils can locate and retrieve explicitly stated information, actions and ideas from text, charts and diagrams. They can also make straightforward inferences about events and reasons for actions.
Intermediate International Benchmark	475	Pupils can locate, recognise, and reproduce explicitly stated actions, events and feelings, as well as make straightforward inferences about the attributes, feelings, and motivations of main characters in stories. They can also begin to integrate and compare information about central ideas and events across the text, and make basic inferences about language choices.
High International Benchmark	550	Pupils can locate and distinguish significant actions and details embedded across the text, and make inferences to explain relationships between intentions, actions, events, and feelings. They can also connect ideas and sequence events across different elements of a text. Pupils will also be able to interpret and integrate story events and character traits and recognise figurative language features such as metaphor and imagery.
Advanced International Benchmark	625	Pupils can interpret and integrate story events and character actions to describe character's feelings, motivations, and character development, and evaluate the intended effects of author's language and style choices. They can also evaluate how the author's selection of visual elements such as charts and diagrams convey the author's point of view.

Source: IEA's PIRLS 2021

Figure 2 shows the proportion of pupils in England and both comparator groups that performed at each International Benchmark in PIRLS 2021. More than half of pupils in England (57%) reached the High International Benchmark. This is consistent with England's overall score of 558, which is slightly above the High International Benchmark of 550. Although Australia has a lower percentage of pupils reaching each of the Benchmarks than England, this difference is most pronounced at the High Benchmark, met by 48% of pupils in Australia. Singapore has nearly twice the proportion of pupils reaching the Advanced Benchmark (35%) compared to England (18%), but in both England and Singapore the same proportion of pupils (97%) performed at a level above

the Low International Benchmark score of 400. Hong Kong has a lower percentage of pupils reaching the Advanced and High Benchmarks than Singapore, but also fewer pupils performing at levels below the Intermediate and Low Benchmarks, indicating that in Hong Kong there was a narrower range of performance overall.

Figure 2: Percentage of pupils in England and comparator systems reaching each International Benchmark in PIRLS 2021

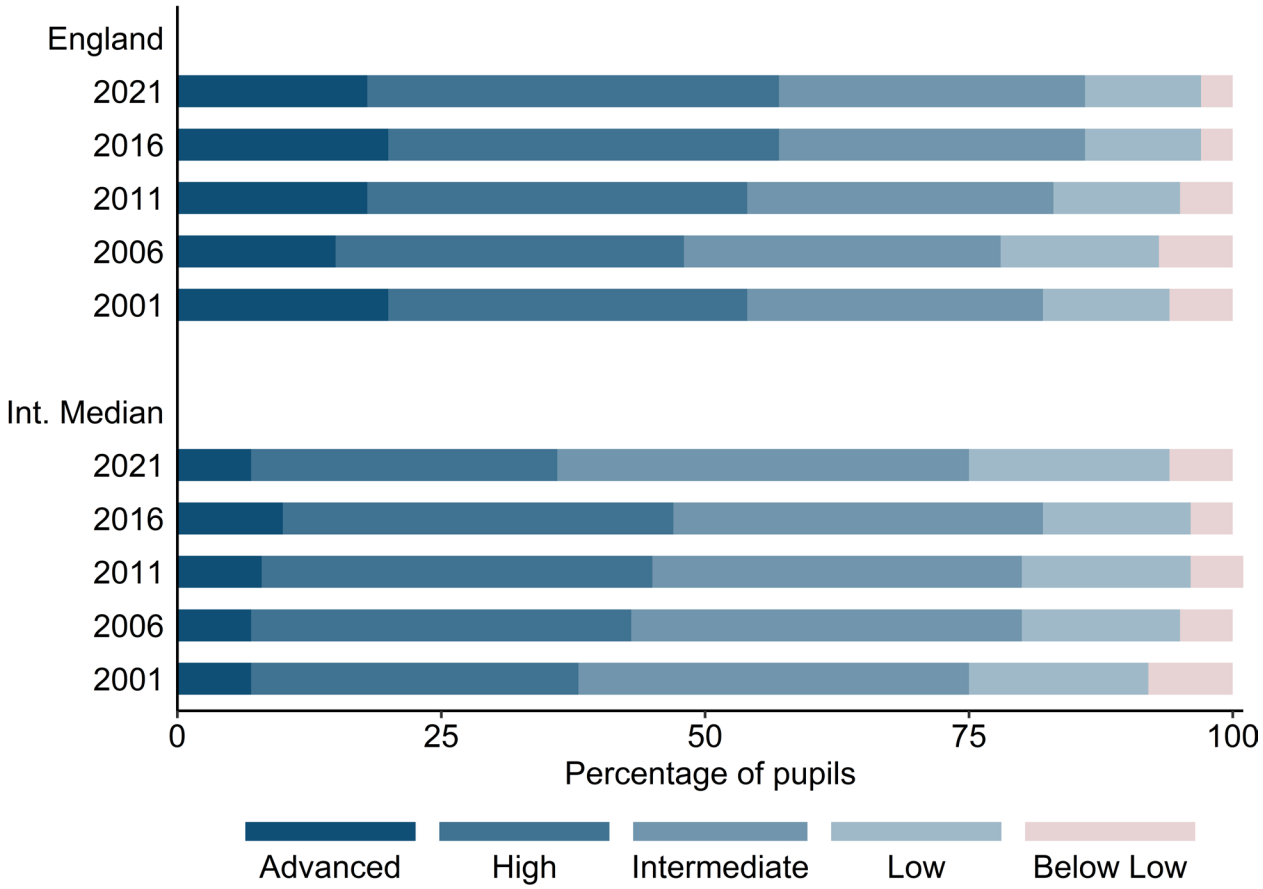


Education system	Advanced	High	Intermediate	Low
England	18%	57%	86%	97%
Singapore	35%	71%	90%	97%
Hong Kong SAR	21%	68%	92%	98%
Australia	14%	48%	80%	94%
International Median	7%	36%	75%	94%

Source: IEA's PIRLS 2021

Figure 3 shows England's performance at each of the International Benchmarks across all 5 cycles of PIRLS, in comparison to the International Median. Consistent with the international trend of lower overall performance in PIRLS 2021, internationally there has been a reduction in the percentage of pupils meeting each of the benchmarks, with the largest reductions at the High and Intermediate Benchmarks. By contrast, there has been relatively little change in England since 2016 in the proportions of pupils reaching the Low, Intermediate and High Benchmarks, though a slightly lower percentage of pupils in England reached the Advanced Benchmark than in PIRLS 2016.

Figure 3: Performance of England at PIRLS International Benchmarks across PIRLS cycles with respect to International Medians



Education system and cycle	Advanced	High	Intermediate	Low
England 2021	18%	57%	86%	97%
England 2016	20%	57%	86%	97%
England 2011	18%	54%	83%	95%
England 2006	15%	48%	78%	93%
England 2001	20%	54%	82%	94%
Int. Median 2021	7%	36%	75%	94%
Int. Median 2016	10%	47%	82%	96%
Int. Median 2011	8%	45%	80%	95%
Int. Median 2006	7%	43%	80%	95%
Int. Median 2001	7%	38%	75%	92%

Source: IEA's PIRLS 2021

2.4 Contextualisation: Average PIRLS performance in European education systems

European education systems typically perform well in large-scale international assessments such as PIRLS and PISA. It is common for European education systems to feature near the top of rankings in these assessments, and typically, they show positive progress across cycles. The most recent cycle of results from PISA are not yet available, however, when considering the performance of participating European education systems in PIRLS 2021, a decline from previous cycles can be seen. The International Median for PIRLS 2021 has also shown a decline from previous cycles. The potential reasons for this are manifold, and although the impact of the COVID-19 pandemic and school closures in Europe may have had an impact on PIRLS 2021 performance, the absence of a control group means it is impossible to determine the extent of this impact (Mullis et al., 2023). It is also important to reiterate that the differing timeframe and circumstances under which different education systems' data was collected means that direct comparisons should be made with caution, as should inferences about the implications of a general decline, which may relate to the impact of COVID-19 on data collection as well as school operations.

Despite this, some insights can be gained by looking into the performance of some of the participating education systems from Europe to understand variations in performance. **Box 2.1** considers the average performance of European education systems, with specific reference to 3 high-performing systems Finland, Sweden, and Bulgaria.

Box 2.1 PIRLS performance in Europe

The European Median score, which includes the results of 27 participating education systems from Europe, has been slightly higher than the overall International Median score in all five cycles, including in 2021. Between 2001 and 2016, the European median climbed steadily from 528 in 2001, to 547 in 2016. However, the European Median in 2021 was 524, a drop of more than 20 points from 2016. This has been primarily driven by the majority of European education systems experiencing large drops in overall average scores.

Consistent with the trend across most European participating systems, Finland, Sweden, and Bulgaria all scored significantly lower in PIRLS 2021 than in 2016. Finland scored significantly higher in 2011 (568) and 2016 (566) than in 2021 (549), a 17-point decline. Sweden, the top-performing education system in the original PIRLS 2001 cycle, and Bulgaria both performed significantly lower in 2021 than they did in 2001. Sweden showed a decline of 11 points between 2001 (561) and 2016 (555), and the declined a further 9 points between 2016 and 2021 (544). Bulgaria had their highest achievement in 2016 (552), a 20-point improvement from their 2011 score (532), however, in 2021 they declined again achieving an average overall PIRLS score of 540.

Achievement at International Benchmarks is consistently strong across Europe. All of the European education systems have much higher proportions of pupils meeting the Advanced and High Benchmarks than the International Median percentages. Of these 3 European education systems, Bulgaria has the highest proportion of pupils reaching the Advanced Benchmark, but also the highest proportion of pupils that perform below the Low Benchmark. By contrast, Finland has the lowest proportion meeting the Advanced Benchmark, but also the lowest proportion failing to meet the Low Benchmark.

Although there is large variation in performance across European education systems, consistently higher performance from European education systems when compared to international averages has also been seen on other large-scale assessments such as PISA (OECD, 2018; Volante & Klinger, 2021).

3 Performance in reading purpose and process scales

Chapter overview

Chapter 3 provides an overview of pupils' performance in on the reading purpose and process scales used in PIRLS. The chapter begins with an overview of pupils' performance in England and the comparator systems on the 2 reading purpose scales – the 'Literary Purpose' scale, and the 'Informational Purpose' scale. This is followed by an account of trends over time in England and the comparator systems on these scales, as well as how these education systems' relative strengths on these scales has (or has not) changed over time. A similar approach is used to present the performance of England and the comparator systems on the 2 reading process scales – 'Retrieving and Straightforward Inferencing', and 'Interpreting, Integrating and Evaluating'. The chapter first focuses on performance on these scales in 2021 before looking at trends across all five previous cycles of PIRLS, and concluding with a look at relative strengths on one of the 2 reading purpose scales across time.

Key findings

- Contrary to all previous PIRLS cycles, pupils in England performed equally well on the Literary and Informational Purpose Scales. England, and most other culturally-similar English-speaking education systems have historically scored significantly higher on the Literary Scale.
- England's score on the Literary Purpose Scale has decreased slightly from 2016, while the score on the Informational Purpose Scale has slightly increased, though neither of these represent statistically significant changes.

England has continued to score significantly higher on the 'Interpreting, Integrating and Evaluating' Process Scale than the 'Retrieving and Straightforward Inferencing' Process Scale. This remains a common finding among culturally-similar English-speaking education systems.

3.1 Performance in reading purposes

As discussed in section **1.1.1,** each pupil that participates in PIRLS answers questions on 2 different texts. One of the texts is a short fiction piece that assesses how well pupils read texts with the purpose of providing readers with a literary experience. The other text is a short non-fiction piece with the purpose of allowing readers to 'acquire and use information'. Using pupils' responses to the so-called *Literary Purpose* and *Informational Purpose* test questions, PIRLS not only calculates overall scores of reading

comprehension, but also calculates separate scores specifically for *Literary Purpose* and *Informational Purpose* reading.

In PIRLS 2021, England scored similarly on the Literary Purpose and Informational Purpose Scales, with a score of 558 on the Literary Purpose Scale, and 559 on the Informational Purpose Scale.

Table 10 shows the overall performance of England and the comparator systems relative to their performances on the individual Literary Purpose and Informational Purpose Scales. In PIRLS 2021, England scored similarly on the Literary Purpose and Informational Purpose Scales, with a score of 558 on the Literary Purpose Scale, and 559 on the Informational Purpose Scale.

Table 10: Performance of England and comparator systems on the Literary Purpose and Informational Purpose Scales relative to overall performance (2021)

Education system	Overall PIRLS Score	Literary Scale Score	Informational Scale Score	Difference
England	558	558	559	-1
Singapore	587	591	586	5
Hong Kong SAR	573	564	582	-18
Australia	540	543	539	4
International Median	520	520	520	0

Statistical significance is not reported for the magnitude of the differences in performance between scales. Difference is calculated as Literary Scale Score – Informational Scale Score.

Source: IEA's PIRLS 2021.

It is important to note that the scaling process takes into account question difficulty. This means that, for example, the pupils in an education system that scored significantly higher on the Informational Purpose Scale did not necessarily gain more marks on Informational Purpose questions than Literary Purpose questions, if over all participating education systems, pupils found the questions on the Literary Purpose texts easier. Rather, the pupils in that system were *relatively* strong on the Informational Purpose questions compared to the Literary Purpose questions, relative to how every participating system fared on these scales.

In the case of England, who scored a single point higher on the Informational Purpose Scale than the Literary Purpose Scale in 2021, it is important to remember that this does not necessarily mean that pupils in England scored more marks on Informational Purpose questions, but rather, pupils in England did not demonstrate much of a relative strength on either the Literary or Informational Purpose texts, relative to the pupils in other education systems.

England's score of 558 on the Literary Purpose Scale was significantly lower than Singapore (591) but not significantly different to Russia (566) or Hong Kong (564). England scored significantly higher than every other education system, other than Poland (552). England's score of 559 on the Informational Purpose Scale meanwhile was significantly lower than Singapore (586), Hong Kong (582), and Russia (568), and significantly higher than every other system.

There were no statistically significant differences between Hong Kong and Singapore's performances on the Informational Purpose Scale, or between Hong Kong and England's performances on the Literary Purpose Scale. Both Singapore and Australia had slightly higher scores on the Literary Purpose Scale than the Informational Purpose Scale, and there was no difference in the International Median scores of the 2 Purpose Scales.

Of the comparator systems, Hong Kong showed the greatest difference in performance across the 2 Purpose Scales, scoring 18 points higher on the Informational Purpose Scale than the Literary Purpose Scale. This trend was common across education systems that administered the test in Chinese, with Macao SAR (22 points higher) and Taiwan (16 points higher) joining Hong Kong as the 3 education systems in PIRLS 2021 with the largest differences in performance between the scales in favour of the Informational Purpose Scale.

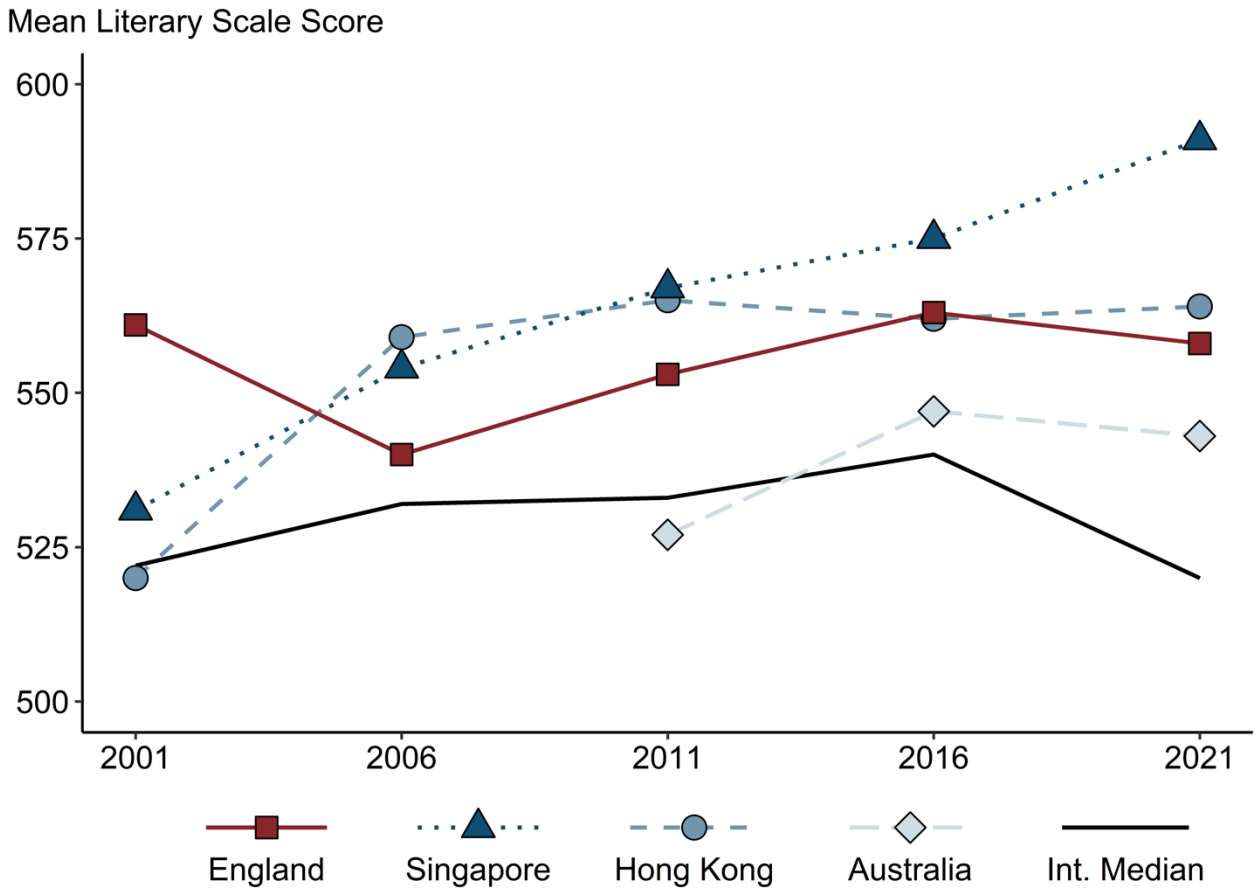
There are also patterns in the relative strengths on these scales among culturally-similar English speaking systems when including the results from delayed assessment systems such as Ireland, Northern Ireland, and the United States. These 3 systems all scored higher on the Literary Purpose Scale than the Informational Purpose Scale, each having differences of more than 10 points. In the case of the United States, the difference of 18 points was greater than for any other system that participated in PIRLS 2021, and as is touched upon in section **3.1.1**, stronger performance on the Literary Scale has been typical of culturally similar English-speaking education systems in previous cycles of PIRLS. As was shown in **Table 10** however, this was not the case for England in PIRLS 2021.

3.1.1 Trends in performance on Literary and Informational texts

Figure 4 shows the performance of England and the comparator systems on the Literary Purpose Scale across previous PIRLS cycles, as well as in comparison to the International Median score. England's score of 558 in PIRLS 2021 is significantly higher than their score on the Literary Purpose Scale in 2006, but not significantly different to their scores on this scale in 2001, 2011, or 2016. The small differences in points between these cycles, including the 5 point drop from 2016 to 2021, should therefore be interpreted cautiously.

Singapore's score of 591 is significantly greater than their performance on the Literary Purpose Scale in all 4 previous cycles, and represents a 16 point increase from 2016. Hong Kong's score meanwhile is a significant improvement from 2001, but not significantly different to their score in the previous 3 cycles. Australia's performance is roughly in line with their performance on this scale in 2016, and a statistically significant improvement on their performance in 2011.

Figure 4: Performance of England and comparator systems on the reading for Literary Purpose Scale across PIRLS cycles



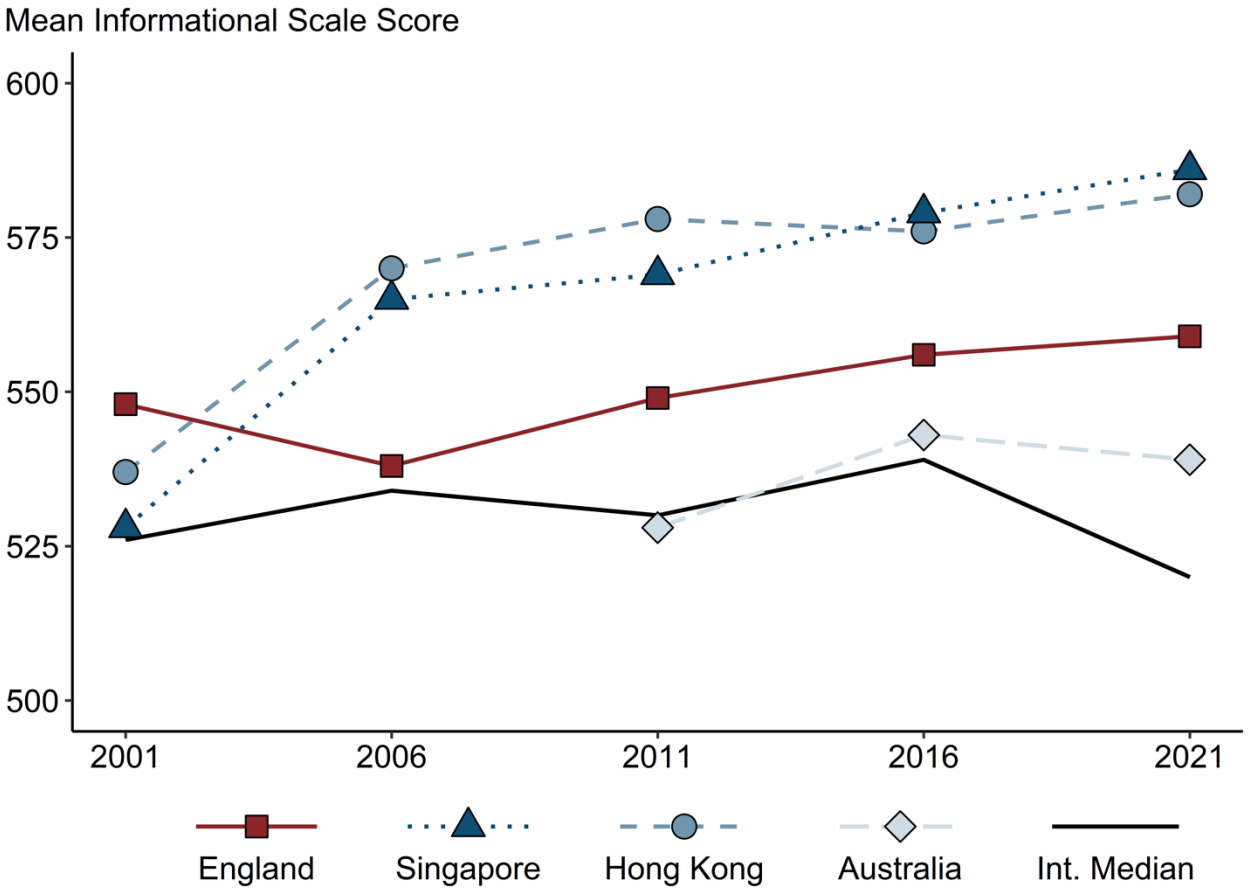
Education system	2001	2006	2011	2016	2021
England	561	*540	553	563	558
Singapore	*531	*554	*567	*575	591
Hong Kong SAR	*520	559	565	562	564
Australia	n/a	n/a	*527	547	543
International Median	522	532	533	540	520

Asterisks (*) indicate that the score shown is significantly different to that system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

Figure 5 shows the performance of England and the comparator systems on the Informational Purpose Scale across PIRLS cycles, and with respect to the International Median score in each cycle. England's score of 559 on the Informational Purpose Scale is higher than all 4 previous cycles of the study, and represents a statistically significant improvement from the 2001, 2006, and 2011 cycles. The difference between the 2016 and 2021 scores on these scales does not represent a statistically significant improvement in score. Singapore and Hong Kong also both recorded their highest scores on this scale across all 5 cycles, but the improvements from 2016 are not statistically significant. Australia's score on this scale has decreased since 2016, but this change is also not statistically significant.

Figure 5: Performance of England and comparator systems on the reading for Informational Purpose Scale across PIRLS cycles



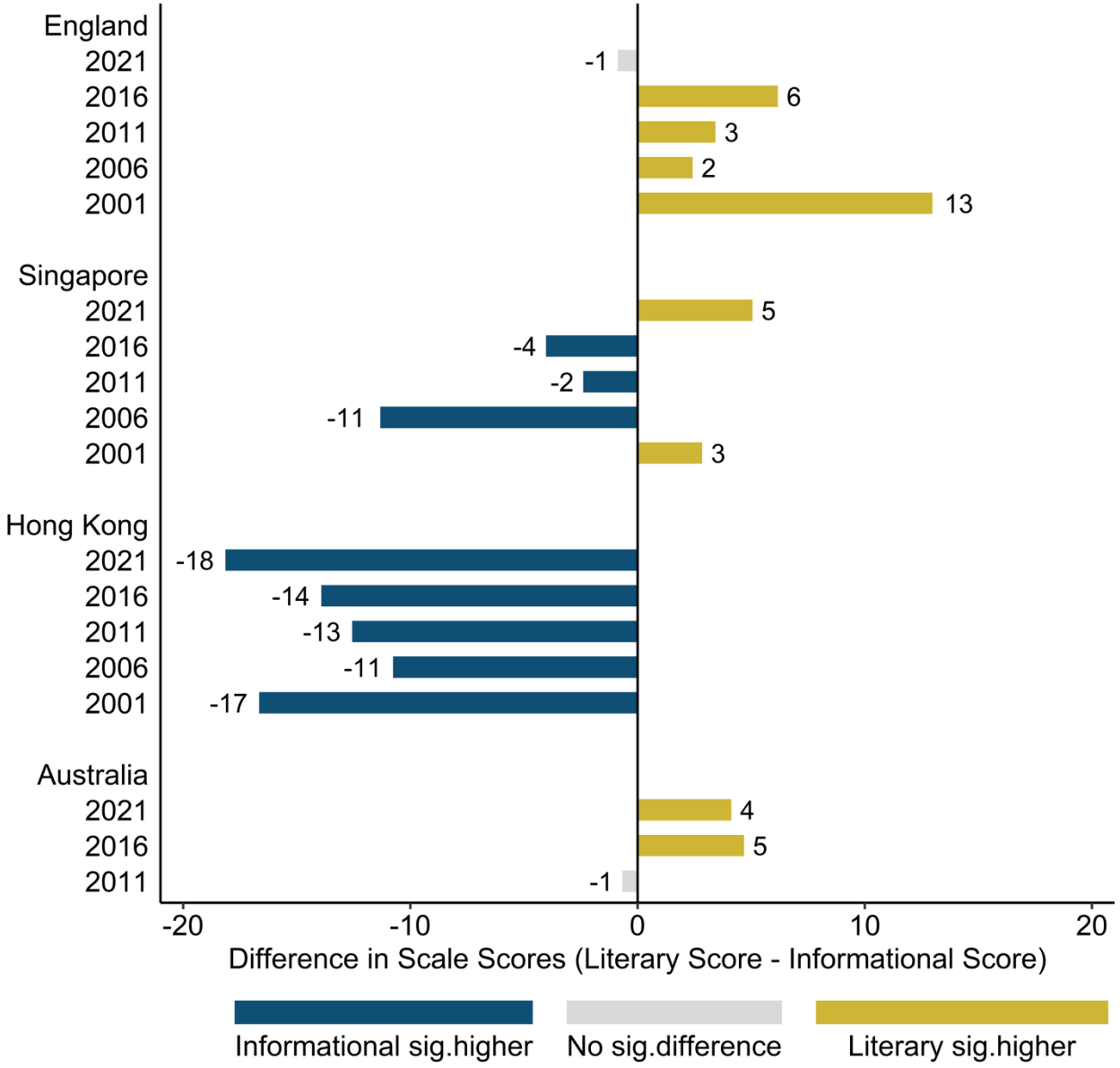
Education system	2001	2006	2011	2016	2021
England	*548	*538	*549	556	559
Singapore	*528	*565	*569	579	586
Hong Kong SAR	*537	*570	578	576	582
Australia	n/a	n/a	*528	543	539
International Median	526	534	530	539	520

Asterisks (*) indicate that the score shown is significantly different to that system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

Figure 6 shows the differences in Literary Purpose and Informational Purpose Scale scores for England and the comparator systems across all 5 cycles. Statistically significant differences in performances across the 2 scales are also highlighted.

Figure 6: Differences in Literary and Informational Purpose Scale scores across PIRLS cycles for England and comparator systems



Education system	2001	2006	2011	2016	2021
England	13	2	3	6	-1
Singapore	3	-11	-2	-4	5
Hong Kong SAR	-17	-11	-13	-14	-18
Australia	n/a	n/a	-1	5	4

Differences calculated as Literary Scale Score – Informational Scale Score

Source: IEA's PIRLS 2021

In every previous cycle of PIRLS, England has scored significantly higher on the Literary Purpose Scale than the Informational Purpose Scale. This has previously been observed as a relatively consistent finding across culturally-similar English-speaking education systems. However, this was not the case for England in PIRLS 2021, with a slightly higher score on the Informational Purpose Scale for the first time. It should be noted that the difference in performance on the 2 scales is not statistically significant, and neither are the individual changes in score on either Purpose Scale.

Singapore's results in 2021 have also bucked a historical trend of typically performing more strongly on the Informational Purpose Scale, with a score 5 points higher on the Literary Purpose Scale than the Informational Purpose in PIRLS 2021. This difference shows that pupils in Singapore performed significantly better on Literary Purpose texts than Informational Purpose texts in PIRLS 2021, relative to the performance on these types of texts in other participating education systems. Hong Kong has consistently scored significantly higher on the Informational Purpose Scale, while Australia has performed significantly better on the Literary Purpose Scale in the last 2 cycles of PIRLS.

3.2 Performance in reading comprehension processes

Together with 2 reading purposes, PIRLS also assesses 4 comprehension processes within the literary and informational passages:

- focus on and retrieve explicitly stated information;
- make straightforward inferences;
- interpret and integrate ideas and information; and
- evaluate and critique content and textual elements.

Each of the questions associated with the reading passages in PIRLS aim to assess one of these comprehension processes and the responses are then psychometrically modelled into scores for 2 process scales; the *Retrieving and Straightforward Inferencing* (RSI) process scale, and the *Interpreting, Integrating and Evaluating* (IIE) process scale.

In the PIRLS 2021 assessment half of the questions aim to assess comprehension processes related to the RSI Scale. The RSI questions are usually related to a small portion of text in the passages where 20% of the total questions in PIRLS 2021 ask pupils to 'focus on or retrieve explicitly stated information' from the relevant portion of text, and 30% require pupils to 'make straightforward inferences' from the information in the text. The other half of questions in PIRLS 2021 aim to assess comprehension processes related to IIE Scale. IIE questions usually relate to the entire passage or larger portions of the text in a passage where 20% of the questions ask pupils to 'interpret and integrate ideas and information', while 30% ask pupils to 'evaluate and critique content and textual elements'.

Table 11 shows the overall performance of England and the comparator systems in PIRLS 2021 relative to their performances on the RSI Scale and the IIE Scale.

Table 11: Performance of England and comparator systems on the reading comprehension process scales relative to overall performance (2021)

Education system	Overall PIRLS Score	RSI Scale Score	IIE Scale Score	Difference
England	558	554	561	-7
Singapore	587	584	591	-7
Hong Kong SAR	573	577	572	5
Australia	540	534	547	-13
International Median	520	520	520	0

Statistical significance is not reported for the magnitude of the differences in performance between scales. Difference is calculated as Literary Scale Score – Informational Scale Score.

Source: IEA's PIRLS 2021.

Pupils in England performed slightly above their overall PIRLS 2021 score on the IIE Scale (561) and had slightly lower performance on the RSI Scale (554). This means that pupils in England were relatively stronger on questions requiring higher-level interpretive and evaluative comprehension skills than they were on questions requiring more straightforward retrieval and inferencing, relative to the pupils in other education systems.

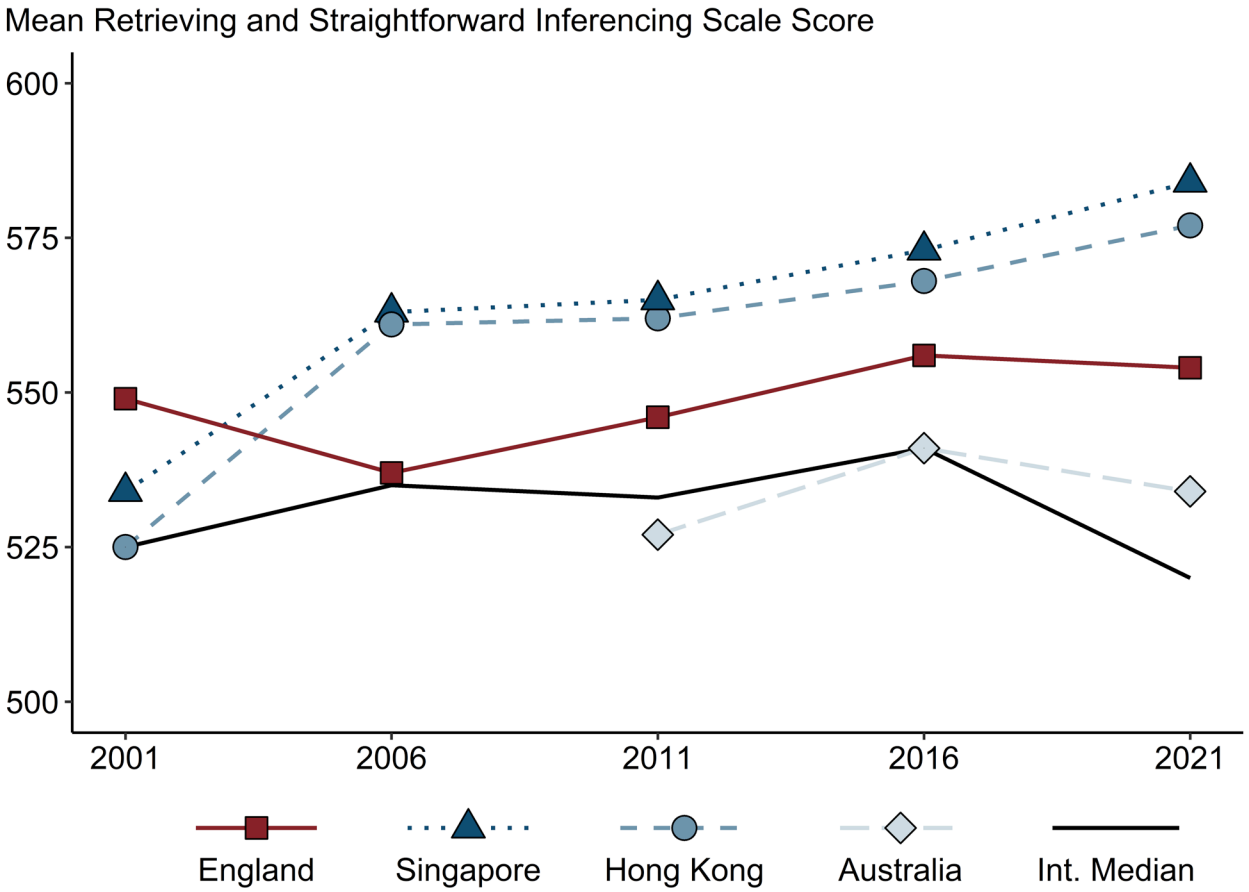
England was one of 15 education systems participating in PIRLS 2021 that showed strength on the IIE Scale relative to their overall average. Internationally, the trend of higher scores on the IIE Scale is common among English-speaking systems. Among the comparators, higher performance on the IIE Scale was also seen in Singapore and Australia who both had IIE scores higher than their RSI Scale score. Internationally, Australia was one of the education systems with the highest magnitude difference between their overall score and their scores on the individual process scale scores, with an RSI score 6 points lower than their overall average (540), and an IIE score 7 points higher.

Hong Kong, on the other hand, were among 10 other education systems that showed relative strength in the RSI Scale compared to their overall average. For Hong Kong, there was almost no difference between their overall average (572) and their score on the IIE Scale (573), however, their score on the RSI Scale was 5 points higher (577) than their overall average in PIRLS 2021.

3.2.1 Trends in performance on comprehension process scales

Figure 7 shows the performance of England and the comparator systems on the RSI Scale across previous PIRLS cycles, as well as in comparison to the International Median score on this scale.

Figure 7: Performance of England and comparator systems on the Retrieving and Straightforward Inferencing Process Scale across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	549	*537	*546	556	554
Singapore	*534	*563	*565	*573	584
Hong Kong SAR	*525	*561	*562	*568	577
Australia	n/a	n/a	*527	*541	534
International Median	525	535	533	541	520

Asterisks (*) indicate that the score shown is significantly different to that system's score for PIRLS 2021.

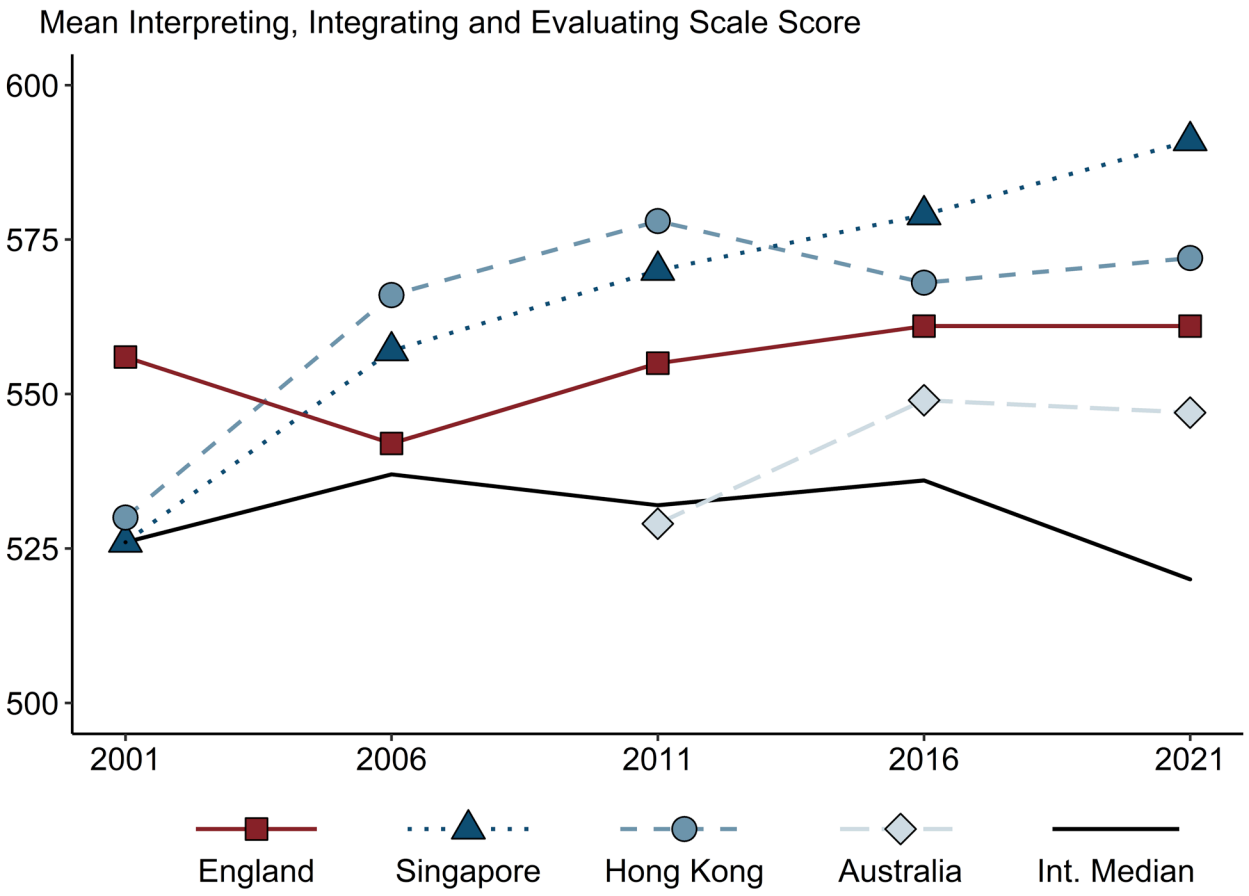
Source: IEA's PIRLS 2021

England's score on the RSI Scale in PIRLS 2021 is significantly higher than the score on the same process scale for 2006 and 2011, but not significantly different from their score in the more recent 2016 cycle. Singapore and Hong Kong both show an upward trend on the RSI Scale from 2001 to 2021. Singapore has shown an increase of 11 points from 2016 and has significantly higher performance in 2021 compared to all previous cycles. Hong Kong has shown a 9-point increase since 2016 and has significantly higher performance in 2021 than all previous cycles. Although England, Singapore and Hong Kong show either improvement or stability from 2016 to 2021, Australia and the International Median both show a downward trend across this same period. Australia's

performance on the RSI Scale in 2021 is significantly better than their performance in 2011, but significantly lower than their 2016 performance on this scale.

Figure 8 shows the performance of England and the comparator systems on the IIE Scale across previous PIRLS cycles, as well as in comparison to the International Median score on the IIE Scale. England's performance on the IIE Scale in 2021 is significantly higher than their score on this scale from 2006, but is not significantly different to their score in any other cycle. Similar to the trend seen on the RSI Scale, the International Median for the IIE Scale has decreased from 536 in 2016 to 520 in 2021.

Figure 8: Performance of England and comparator systems on the Interpreting, Integrating and Evaluating Process Scale across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	556	*542	555	561	561
Singapore	*526	*557	*570	*579	591
Hong Kong SAR	*530	566	578	568	572
Australia	n/a	n/a	*529	549	547
International Median	526	537	532	536	520

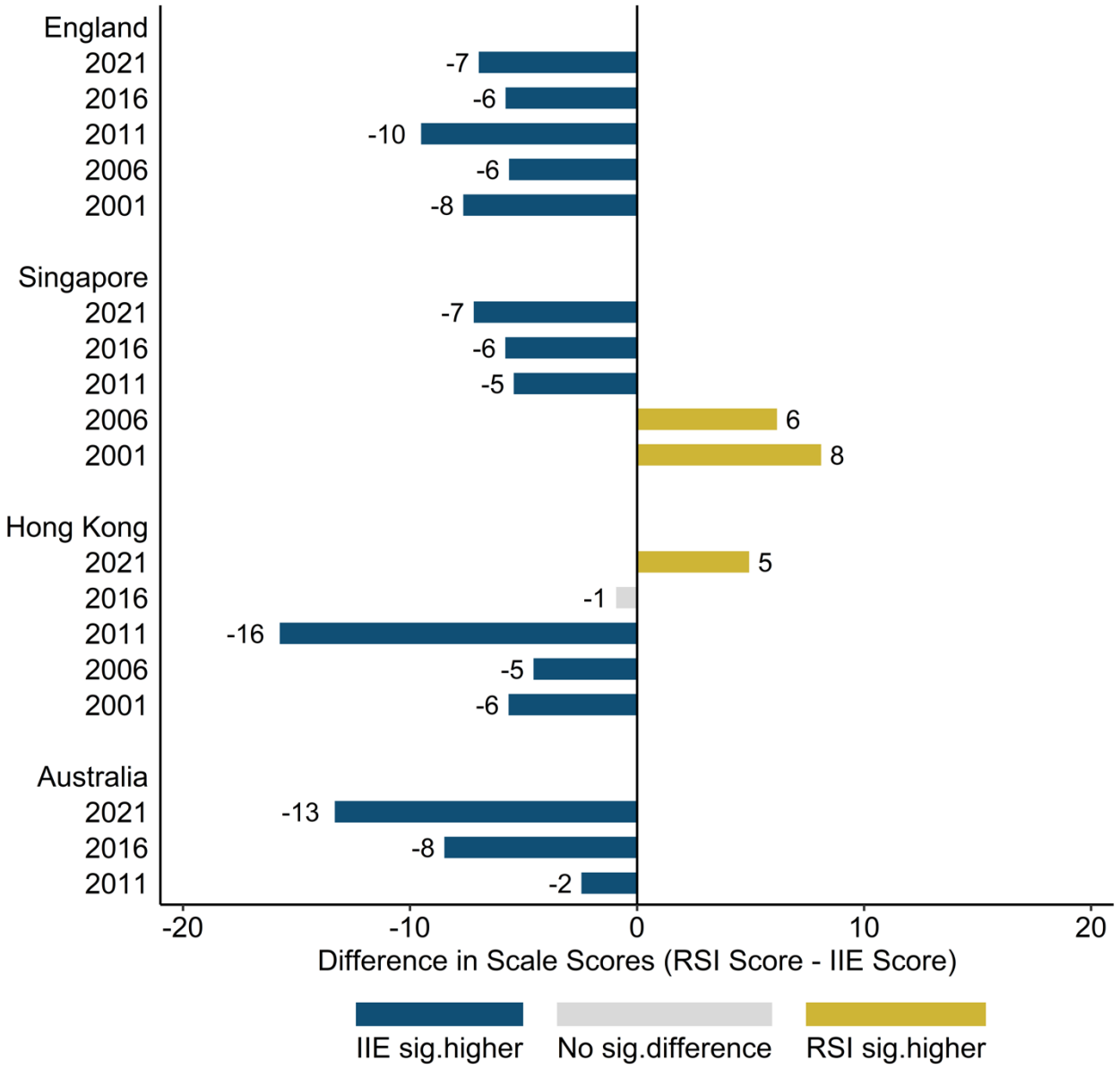
Asterisks (*) indicate that the score shown is significantly different to that system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

Singapore's performance on the IIE Scale has shown an upward trend since 2001, with their performance on this scale in 2021 being significantly higher than all 4 previous cycles. Although the IIE Scale score for Hong Kong has shown slight changes from cycle to cycle, only the improvement from the original 2001 cycle has been statistically significant. Australia's IIE Scale score for 2021 is significantly better than their 2011 score, but unlike their performance on the RSI Scale, the decrease in score from 2016 on the IIE Scale is relatively small and does not represent a statistically significant drop.

Figure 9 shows the trends in the differences between RSI and IIE Scale scores for England and the comparators across all 5 cycles. Statistically significant differences in performances across the 2 process scales are also highlighted. Both England and Australia have scored significantly higher on the IIE Scale than the RSI scale in all of their previous participations in PIRLS. This is a common finding across English-speaking education systems, as well as the majority of high-performing European education systems participating in PIRLS (Mullis et al., 2023). Singapore's results show a change from significantly higher performance on the RSI Scale in 2001 and 2006 to significantly higher performance on the IIE Scale since 2011. Hong Kong, on the other hand, reversed their pattern from previous cycles in 2021, scoring significantly higher on the RSI Scale than the IIE Scale for the first time.

Figure 9: Differences in comprehension processes scales scores across PIRLS cycles for England and comparator systems



Education system	2001	2006	2011	2016	2021
England	-8	-6	-10	-6	-7
Singapore	8	6	-5	-6	-8
Hong Kong SAR	-6	-5	-16	-1	5
Australia	n/a	n/a	-2	-8	-13

Differences calculated as RSI Scale Score – IIE Scale Score

Source: IEA's PIRLS 2021

3.3 Contextualisation: Reading for Literary Purposes and curricula in Ireland and Northern Ireland

The extent of relative differences in performance on the Literary and Informational Purpose Scales varied across participating education systems; 23 systems, including England, did not perform substantially differently across the 2 reading purposes assessed by PIRLS 2021. A strength on the Informational Purpose Scale was seen in 3 East Asian systems; Macao, Hong Kong and Taiwan. A relative strength in reading for Literary Purpose was evident in the United States, Georgia and Croatia; as well as other English-speaking systems such as Northern Ireland and Ireland, and benchmarking regions of Canada. **Box 3.1** focuses on the strength in reading for Literary Purpose in Ireland and Northern Ireland and its relationship to reading curricula in both education systems.

Box 3.1 Northern Ireland and Ireland: Literary reading and national curricula

Northern Ireland and Ireland are among seven of the education systems with the highest relative strength in reading for Literary Purpose compared to Informational Purpose in PIRLS 2021. In Ireland, the average Literary Scale score was 6 points higher than their overall average in PIRLS 2021 (577); while in Northern Ireland the average Literary Scale score was 7 points higher than their overall average in PIRLS 2021 (566). In both cases, there was approximately 10 points difference between the 2 scale scores, and performance on the Informational Purpose Scale was 4 points below their overall average for PIRLS 2021. The same trend was evident in PIRLS 2016, where both education systems showed a significantly higher scale score for reading for Literary Purpose when compared to their overall average.

Higher relative performance on the Literary Scale is more commonly seen in education systems where the reading curriculum begins with a focus on stories in the early grades and transitions to focusing on reading to learn subject content in upper grades (Reynolds et al., 2022). Reading for specific purposes is central to the PIRLS reading framework, and similar areas of focus can be seen across the curricula of participating systems. The National Research Coordinators (NRCs) in both Ireland and Northern Ireland reported that there was a major emphasis on Reading for Literary Experience as well as Reading to Acquire Information in their respective national language/reading curricula.

The emphasis on using different types of texts in the primary school is highlighted in the new Primary Language Curriculum (PLC) for Ireland (NCCA, 2019). This curriculum supports teaching and learning in both English and Irish. One of the key aims of the PLC is to prioritise developing pupils' ability to explore and use language for a wide range of purposes. Teachers are encouraged to create engaging learning experiences for pupils using texts across a diverse range of purposes, genres and types.

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Box 3.1 (continued)

There are also specialist reading initiatives in Ireland that aim to foster reading for enjoyment such as the Drop Everything and Read (DEAR) programme, a popular reading initiative that is frequently implemented to promote silent reading, pupil choice and reading for enjoyment (Delaney et al., 2022).

In Northern Ireland, the curriculum for language/reading has been in place since 2007 (CCEA, 2007). Similar to the diversity of text type encouraged in Ireland, the domain of reading in the curriculum for Northern Ireland also encourages reading, exploring, using and understanding a wide range of texts. Pupils in Northern Ireland are also encouraged to engage in independent reading activities for enjoyment as well as to acquire information (Boyd, 2022).

The reading curricula in both Ireland and Northern Ireland promote diversity in the type of text used in the classroom and do not explicitly focus on reading for literary experiences above other reading purposes. Despite this, the performance of pupils from both education systems on the PIRLS Literary Purpose Scale is higher than the Informational Purpose Scale. Potential influences in the results across these scales are wide ranging and it is difficult to know precisely why pupils in Northern Ireland and Ireland perform better on literary texts.

Teachers of pupils from Northern Ireland who participated in PIRLS 2021 report using a wide range of text types for reading activities. However, there are differences between the reports of the frequency at which different text types are used in the classroom; 93% of pupils' teachers report using longer fiction books at least once a week, while only 38% report using longer non-fiction books at the same frequency. Internationally, an average of 39% of participating pupils' teachers report that they use longer fiction books at least once a week in reading lessons, and 26% report using longer non-fiction books at the same frequency. Teacher reports from Ireland are not available for pupils that participated in PIRLS 2021.

Classroom policy and practice are not the only factors likely to influence differences in reading achievement across purpose scales in these education systems. The broader influences on reading development both at home and in the early stages of language development are widely acknowledged, and differential exposure to more fiction materials both inside and outside of the classroom, as well as in home contexts, and variations in early literary experiences are all likely to impact pupil performance on PIRLS.

4 Reading performance of higher and lower performing pupils

Chapter overview

This chapter discusses the distribution of reading performance in England and comparator education systems, focusing on the spread between the lowest-scoring (10th percentile) and highest-scoring (90th percentile) pupils. First, the chapter gives an overview of the spread of performance (at the 10th, 50th, 90th percentiles) across England and comparator systems included elsewhere in this report. It then presents trends across PIRLS cycles at these different levels of performance as well as across subscales in England.

Key findings

- There has been a continued narrowing of the gap between the lowest-scoring and highest-scoring pupils in England.
- Considering the long-term trend, the narrowing of the gap between lowest- and highest-performing pupils is due to an increase in the scores of the lower achievers rather than a decrease in the scores of the higher achievers.
- England and comparators mostly showed fairly stable recent trends in the gap between the 10th and 90th percentiles (2016-2021) while the International Median showed a marked drop.

4.1 Distribution of reading performance

So far in this report, we have focused on mean-level performance within education systems, either in terms of overall performance (chapter **2**), or on the Reading Purpose (section **3.1**) or Comprehension Process (section **3.2**) subscales. However, these averages do not provide much information regarding the ranges of performance within education systems.

In this chapter, we focus primarily on performance at the 10th and 90th percentiles. Scores at the 10th percentile represent the highest score achieved by pupils in the bottom 10% of pupils in that education system. Scores at the 90th percentile meanwhile represent the highest score achieved by pupils in the lowest 90% of pupils in that system. This can also be considered as the highest score achieved by a pupil that was not among the top 10% of pupils in that education system. By focusing on the 10th and 90th percentiles, we are able to provide a better picture of the distribution of reading performance within England,

and assess how wide the gaps are between the highest-performing and lowest-performing pupils, and how this has changed over time.

We also often refer to the 50th percentile, which represents the median score within an education system; this is the score which separates the bottom 50% of pupils' scores from the top 50%. Note that these scores often differ slightly to the mean scores reported throughout the rest of the report, because the distribution of scores in education systems are not necessarily symmetrical around the mean.

Table 12 summarises overall reading scores at the 10th, 50th, and 90th percentiles for England and the comparator systems in PIRLS 2021. The table also shows the range between the 10th and 90th percentiles.

Table 12: Average scores at the 10th, 50th and 90th percentile for England and comparator systems (2021)

Education system	10th Percentile	50th Percentile	90th Percentile	Range
England	458	562	651	192
Singapore	473	597	686	213
Hong Kong SAR	488	579	651	163
Australia	432	546	639	207
International Median	422	525	610	196

Ranges may appear inconsistent with percentiles due to rounding.
Range calculated as 90th percentile – 10th percentile. International Median range is the median range between 10th and 90th percentiles of all participating systems, rather than the range between the 10th percentile median and the 90th percentile median.

Source: IEA's PIRLS 2021

The range between the 10th and 90th percentiles in England is 192 points – slightly below the International Median range of 196 points. It should however be noted that the ranges in scores were generally larger in lower-performing systems, and smaller in many of the higher-performing systems. The median range between the 10th and 90th percentiles was 187 points for systems performing above the overall reading International Median score of 520, slightly less than the range in England. By contrast, for systems with overall reading scores lower than 520, the range between the 10th and 90th percentiles was 216 points.

Hong Kong had the smallest range in performance of all participating systems, followed by the Netherlands and Italy. Singapore and Australia meanwhile had some of the largest ranges in performance among the higher-performing systems. Of the education systems performing above the International Median, New Zealand had the largest range in performance between the 10th and 90th percentiles, and larger-than-average ranges in performance have been typical for education systems that administer PIRLS tests in English in

previous cycles. This was also the case in Northern Ireland, Ireland and the United States in PIRLS 2021.

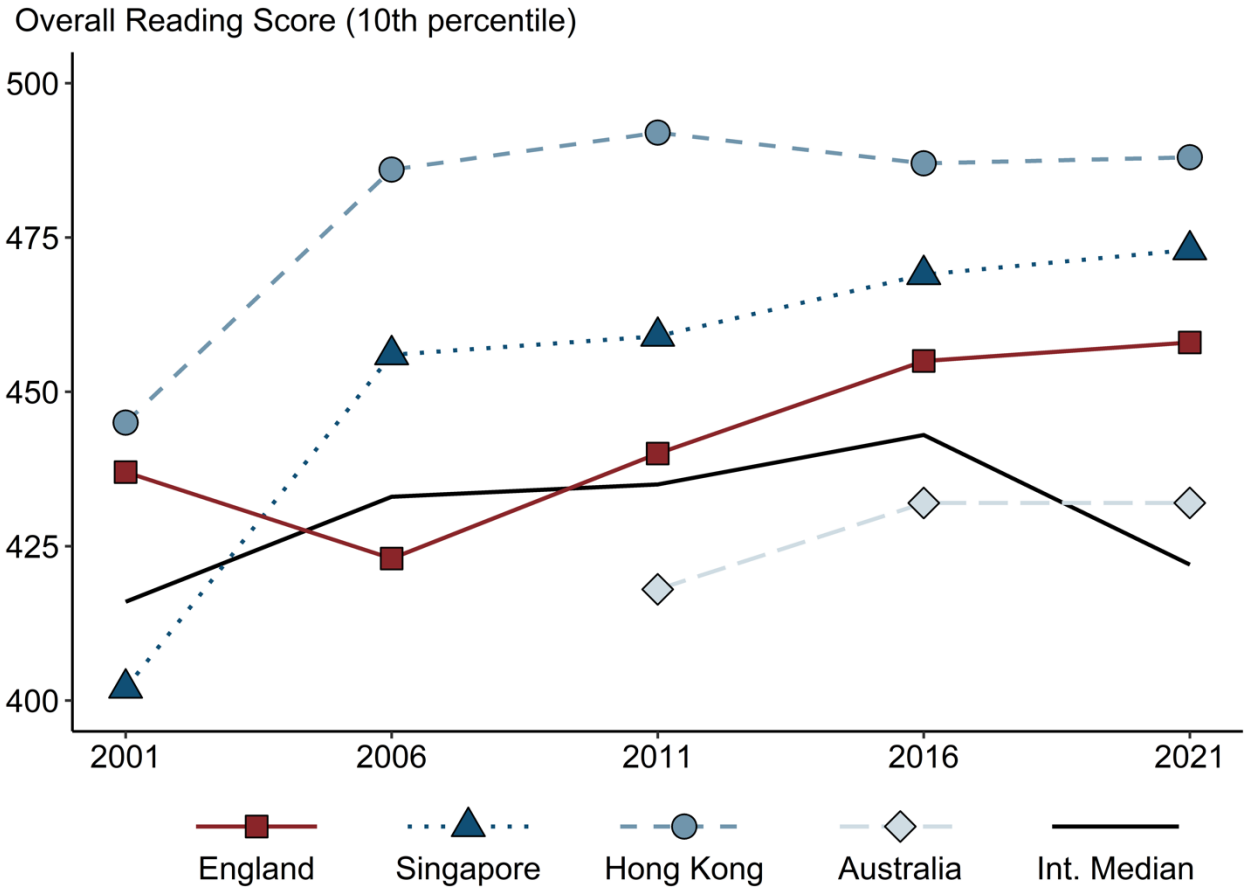
England's score of 458 at the 10th percentile was significantly lower than the 10th percentile scores of Hong Kong (488) and Singapore (473), while England's score of 651 at the 90th percentile was significantly lower than Singapore (686) and not significantly different to Hong Kong (651). England's scores at both the 10th and 90th percentiles were significantly higher than Australia's scores at these percentiles.

4.2 Trends in performance of lower and higher performing pupils

Figure 10 shows the trends in England's scores at the 10th percentiles across all 5 PIRLS cycles relative to these trends in the comparator systems. England's score of 458 at the 10th percentile is significantly higher than England's score at this percentile in every other PIRLS cycle other than PIRLS 2016. Singapore's performance at the 10th percentile in 2021 was significantly higher than in 2001 and 2006 but not in other PIRLS cycles, and similarly Hong Kong had higher 10th-percentile pupil performance relative to 2001 but not relative to other cycles. Australia's performance at the 10th percentile was not significantly different to their performance in either of their previous participations.

While the trend among the comparator systems was relatively stability in performance at the 10th percentile, particularly between PIRLS 2016 and PIRLS 2021, the International Median dropped by 21 points over this period. As has been previously reported, this finding is in keeping with the general trend of the comparator systems, who did not experience the same drops in performance experienced by most participating education systems in PIRLS 2021.

Figure 10: Performance at the 10th percentile for England and comparator systems across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	*437	*423	*440	455	458
Singapore	*402	*456	459	469	473
Hong Kong SAR	*445	486	492	487	488
Australia	n/a	n/a	418	432	432
International Median	416	433	435	443	422

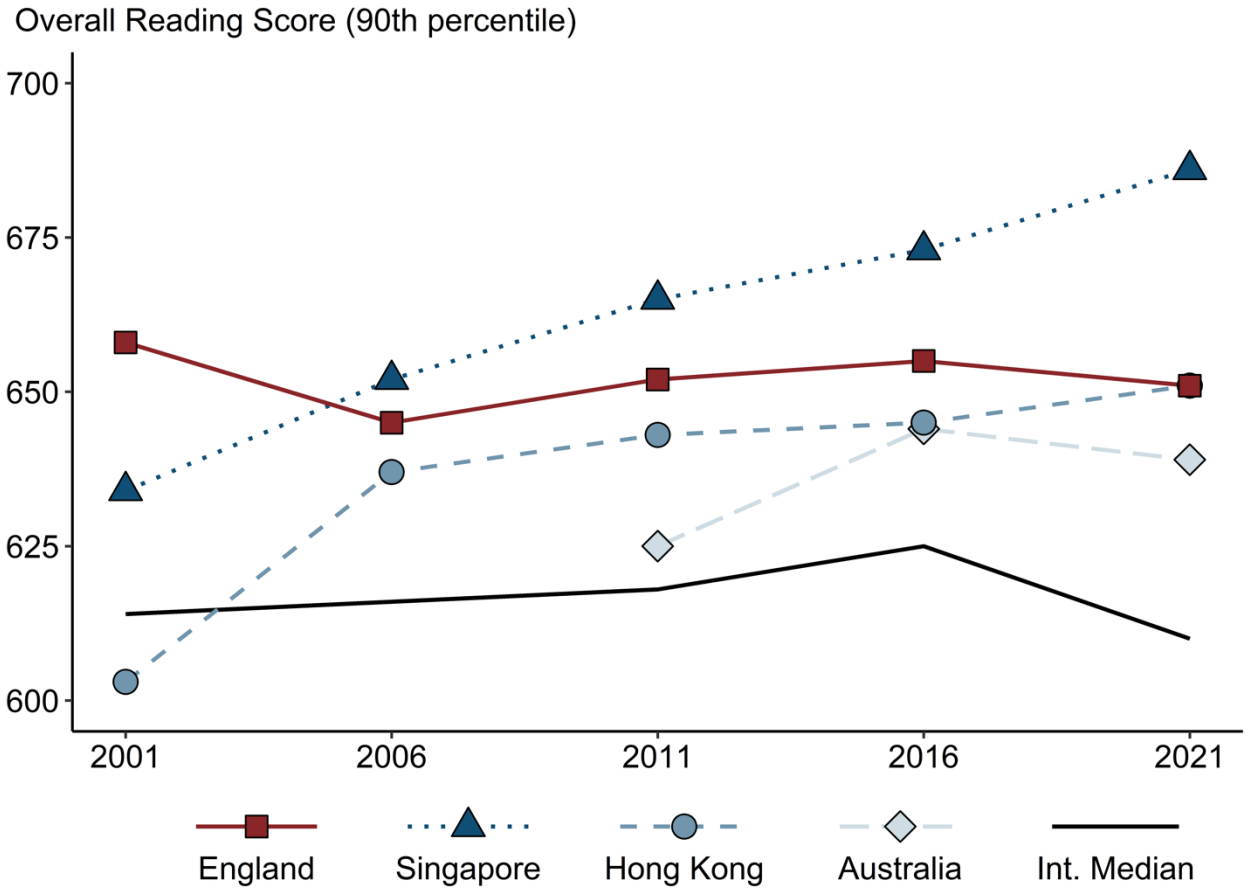
Asterisks (*) indicate that the score shown is significantly different to that education system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

Figure 11 shows the trends in overall performance at the 90th percentile across PIRLS cycles from 2001, 2006, 2011, 2016, 2021. In England, performance at the 90th percentile was quite stable over time; 2021 results were not significantly different from results in any earlier PIRLS cycle. The International Median has been similarly stable across cycles, with a slight decrease between 2016 and 2021. Singapore, on the other hand, has shown a consistently increasing pattern of performance over time at the 90th percentile. Hong Kong and Australia each show marked increases in 90th-percentile reading performance following the first cycles in which they participated (2001 for Hong Kong and 2011 for

Australia), but then level off somewhat thereafter. In Hong Kong, the PIRLS 2021 90th-percentile score is significantly higher than in 2001, 2006 and 2011 but not 2016, and in Australia the 2021 score at the 90th percentile is significantly higher than in 2011 but not 2016.

Figure 11: Performance at the 90th percentile for England and comparator systems across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	658	645	652	655	651
Singapore	*634	*652	*665	*673	686
Hong Kong SAR	*603	*637	*643	645	651
Australia	n/a	n/a	*625	644	639
International Median	614	616	618	625	610

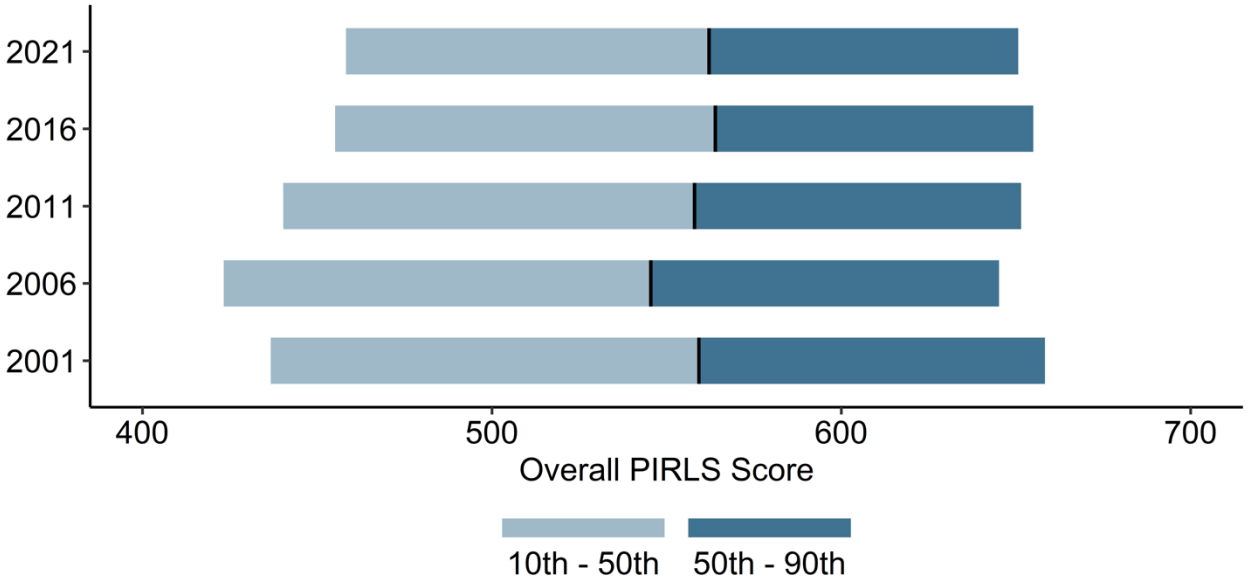
Asterisks (*) indicate that the score shown is significantly different to that education system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

Together, **Figure 10** and **Figure 11** show that the overall distribution of performance in England has not changed much since 2016; there has been a small, not statistically significant narrowing of the gap between the highest-performing and lowest-performing pupils.

Figure 12 provides a different approach to understanding trends over time within England, showing the spread of reading performance between the 10th and 90th percentiles across all of the PIRLS cycles since 2001. The figure shows the narrower overall range between these percentiles in the 2021 cycle compared to previous cycles, as well as the fact that (except in 2006, when the overall distributions shifted downward notably) performance at the 90th percentile has tended to remain roughly similar, as shown by England's data in **Figure 11**. It seems the decrease in overall range between 10th and 90th percentiles is a consequence of the increase in 10th-percentile reading performance, a promising finding in light of the fact that efforts to narrow achievement gaps generally aim to boost outcomes for lower performers without unduly compromising learning and outcomes for higher performers.

Figure 12: Distribution of England's performance between the 10th and 90th percentiles across PIRLS cycles



PIRLS Cycle	10th Percentile	50th Percentile	90th Percentile	Range
2021	458	562	651	192
2016	455	564	655	200
2011	440	558	652	211
2006	423	546	645	222
2001	437	559	658	222

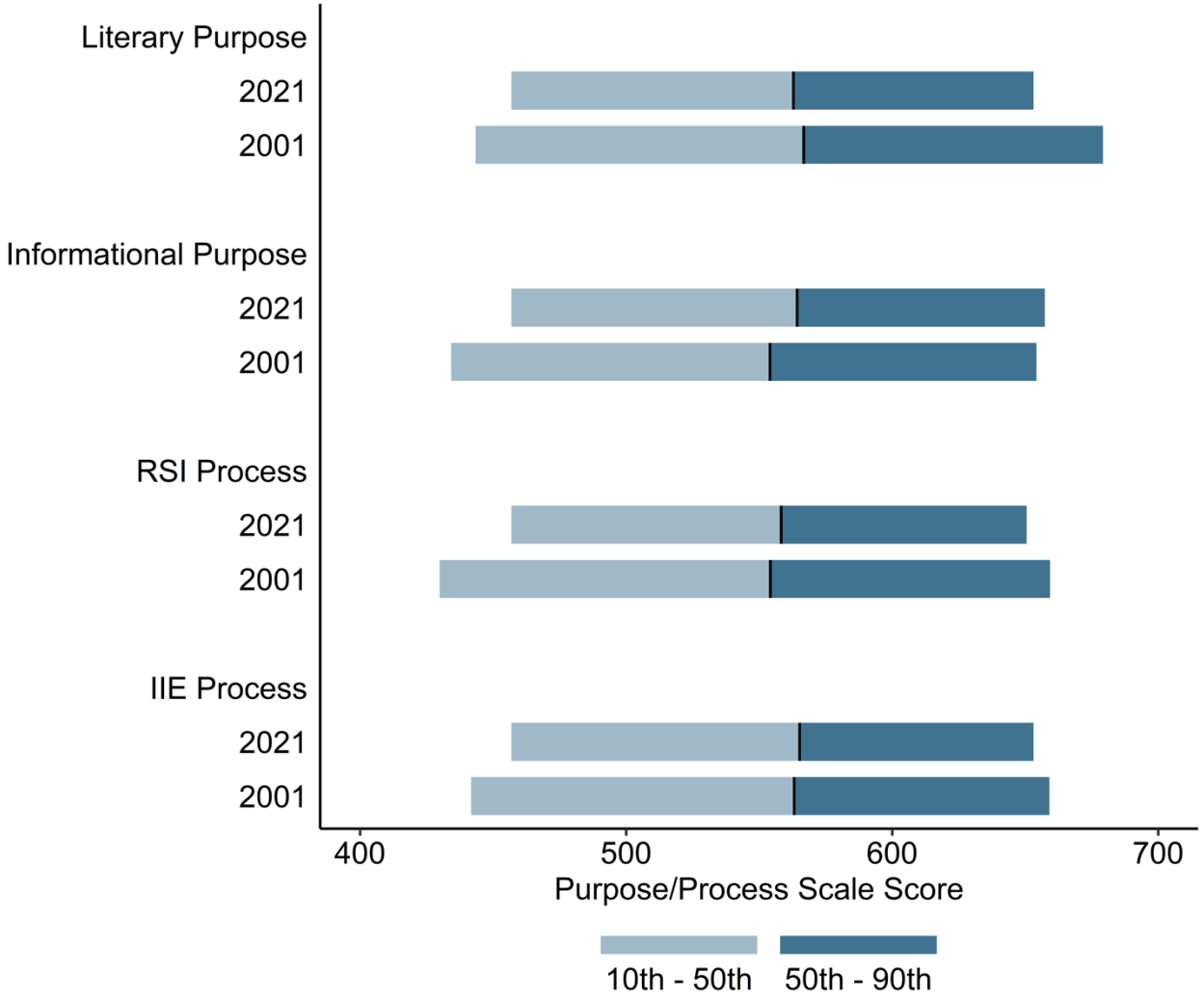
Range calculated as 90th percentile – 10th percentile.
Ranges may appear inconsistent with percentiles due to rounding.

Source: IEA's PIRLS 2021

Finally, **Figure 13** provides insight into how England's reading performance was distributed between 10th and 90th percentiles for each subscale (Literary Purpose, Informational Purpose, RSI Process and IIE Process), focusing on how this has changed in the 20

years since England's participation in the original cycle of PIRLS in 2001. On the whole, the range between 10th and 90th percentiles has narrowed from the 2001 cycle across all of the subscales. Median-level performance across each of the subscales have remained stable with the exception of a more substantial increase from 2001 to 2021 in the Informational Purpose Median. To summarise, again there is some stability in terms of average and high performance although there is slightly more change in 90th percentile literary purpose performance, but apparent improvement in England at the lower end of the distribution.

Figure 13: Comparison of the distributions of England's performance on the Reading Purpose and Comprehension Process subscales in PIRLS 2021 and PIRLS 2001



Subscale	Year	10th Percentile	50th Percentile	90th Percentile	Range
Literary Purpose	2021	457	563	653	196
Literary Purpose	2001	443	567	679	236
Informational Purpose	2021	453	564	657	204
Informational Purpose	2001	434	554	654	220
RSI Process	2021	452	558	651	198
RSI Process	2001	423	554	659	229
IIE Process	2021	463	565	653	190
IIE Process	2001	442	563	659	217

Range calculated as 90th percentile – 10th percentile.
Ranges may appear inconsistent with percentiles due to rounding.

Source: IEA's PIRLS 2021

4.3 Contextualisation: Achievement of higher and lower performing pupils in Singapore

The gap in performance between higher- and lower-achieving pupils, often referred to as the attainment gap, is an area of focus for a number of education systems around the world. In many education systems, substantial resources and effort is put into reducing the attainment gap. However, when looking at reducing this gap, the direction of change is an important consideration. It is not enough to say that the gap has narrowed if the performance shifts towards the lower end of the range of achievement as this would mean that lower-performing pupils are not improving, and higher-performing pupils are getting worse. In most education systems, including England, reducing the attainment gap aims to improve the performance of lower-performing pupils, while ensuring higher-performing pupils continue to show positive progress. **Box 4.1** describes the situation in Singapore, where there have been consistently positive gains at the higher end of achievement.

Box 4.1 Singapore: Improving performance and reducing attainment gaps

Singapore has a large gap in performance of pupils at the 10th and 90th percentiles, one of the largest of all participating education systems in PIRLS. Despite this, it is also the only participating system where achievement across the higher PIRLS International Benchmarks has shown consistent growth across all cycles. Furthermore, the proportion of pupils not reaching the Low Benchmark has reduced, from 10% in 2001 to 3% in 2021, and the percentage of pupils achieving each International Benchmark has increased across each cycle.

Approaches to ensuring all pupils become skilled readers is at the forefront of policy and curriculum in Singapore. The reading and language curriculum focuses on building a strong foundation of basic literacy skills in order to enable high performance throughout schooling (Ministry of Education, 2022a). To ensure this is achieved for all pupils, the Ministry of Education in Singapore has a number of resources and interventions focused on identifying and providing additional support for pupils who have special educational needs, and/or may be at risk of lower literacy levels (Ministry of Education, 2021). Early screening is conducted in first grade to identify pupils for a learning support programme. These pupils receive additional instructional support for 2 years to build their basic literacy skills. Teachers are encouraged to use differentiated instruction and provide extra support for pupils that need it. Additionally, pupils who are identified as having special educational needs are supported by a core group of teachers and allied professionals who receive specific training in supporting special needs (Ministry of Education, 2021).

In 2021, more than a third of pupils in Singapore (35%) reached the Advanced Benchmark, the highest proportion of pupils of all participating systems (Mullis et al., 2023). There are a number of education systems that have been making progress at the Advanced Benchmark level across cycles, however, between 2016 and 2021, Singapore was also the only participating education system to show growth at the Advanced Benchmark level. There are several potential reasons for the growth in performance at higher end of achievement. Although it is not possible to directly measure the impact of COVID-19 interruptions and closures on PIRLS performance over this period, there are some insights that can be gained from Singapore's approach to learning before, during and after the pandemic.

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Box 4.1 (continued)

The shift toward system-wide technology-enabled teaching and learning began in Singapore in 1997 and implementing educational technology in evolving and responsive ways continues to be a national priority (Ministry of Education, 2022b). This means that when in-person teaching and learning was interrupted by the pandemic in 2020, educational-technology systems in Singapore were well placed to ensure a smooth transition to online teaching and learning. Considerable efforts were made to ensure that there was little to no interruption to teaching and learning as a result of the pandemic (Ministry of Education, 2022a). These efforts included ongoing check-ins with schools to address their emerging needs and provide the necessary support in terms of resources and planning, providing digital resources and internet at home to pupils who needed them, and a implementing a curriculum continuity plan. Blended learning approaches that were implemented during the pandemic have become a regular feature of teaching and learning in Singapore; these aim to encourage self-directed learning and develop passionate, lifelong learners (Ministry of Education, 2020).

5 Reading performance by prior attainment

Chapter overview

Chapter 5 focuses on associations between pupils' performance in PIRLS and their prior reading attainment. In particular, this chapter looks at the relationship between pupils' results in PIRLS 2021 relative to their performance on their year 1 and year 2 phonics screening checks, as well as their performance on key stage 1 assessments of reading. In addition, the relationships between these 2 prior assessments of reading and pupils' performance in PIRLS are examined across 2 cycles (2016 and 2021) to understand if the strengths of relationships have changed over time. The chapter concludes with a discussion of relevant results from a comparator education system.

Key findings

- There is a moderate, positive correlation between performance in the year 1 phonics screening check and performance in PIRLS 2021.
- Higher performance on the year 2 phonics screening check was generally associated with higher performance in PIRLS 2021. This finding relates to a smaller group of pupils, as only pupils who did not meet expected standards on or did not participate in the year 1 phonics screening check took part in the year 2 phonics screening check.
- Over 90% of pupils classified as reading at a greater depth within the expected standard on the key stage 1 reading assessment scored above the 'High' International Benchmark score of 550 in PIRLS 2021.
- The median score of pupils who were classified as working at the expected standard on the key stage 1 reading assessment was 560, roughly in line with England's average score in PIRLS 2021.
- Higher key stage 1 reading assessment outcomes were generally associated with higher performance in PIRLS 2021 on average. Pupils classified as working towards the expected standard on the key stage 1 reading assessment, and those classified as pre-key stage, had wider ranges of performance in PIRLS 2021.

5.1 PIRLS performance by prior performance in phonics screening checks

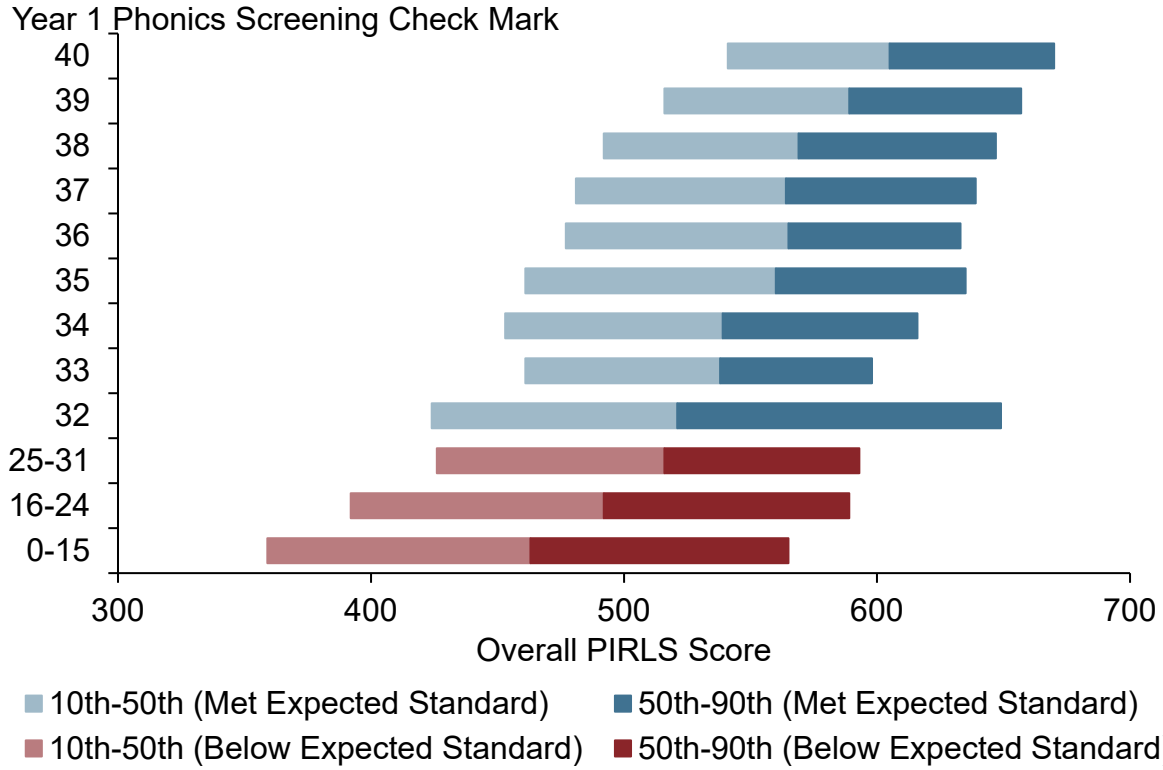
Year 1 pupils in England who attend state-maintained schools or academies are expected to participate in an assessment called the phonics screening check[5]. The aim of the check is to identify pupils who are not yet fluent in decoding the sounds of written words and blending them together to read them aloud. Pupils who take the phonics screening check are asked to read aloud 40 words presented to them. Twenty of these words are real words, with most being a single syllable in length (e.g., “print”, “clouds”), and a few having 2 syllables (e.g., “fabric”, “trapeze”). The other 20 words are ‘pseudo-words’. Pseudo-words are not real words but can be read aloud phonetically (e.g., “barp”, “chell”). Pupils taking the check are presented with 20 alien-like creatures and asked to read out their pseudo-word names presented next to their pictures. This part of the check ensures that pupils taking the check cannot rely on word recognition alone, and must be able to decode the phonetic sounds of unfamiliar words. Since the introduction of the phonics screening check in the 2011/2012 academic year, an ‘expected standard’ has been set at the correct reading of 32 of the 40 words across the check.

Of the 4,150 pupils in England who participated in PIRLS 2021, year 1 phonics screening check performance data was available for 3,621 pupils. These pupils took the phonics screening check near the end of the 2017/2018 academic year. Of these 3,621 pupils, 87.3% scored at or above the ‘expected’ standard threshold of 32 marks out of a possible 40. This figure is above the national average of 82% of pupils who met this threshold in the 2018 assessment. The average (mean) score of these pupils in PIRLS 2021 was 557, not statistically significantly different to the average score of England’s full PIRLS 2021 cohort (558).

Figure 14 shows how pupils’ performance in their year 1 phonics screening check relates to their performance in PIRLS. Data for pupils who scored 32 or higher and therefore met the expected standard are presented in blue at the top of the figure, while the data for pupils who scored less than 32 and so did not meet this expected standard are presented in red, making up the bottom 3 rows of the figure. Because only a small proportion of pupils in England’s sample did not meet the expected standard, their results have been grouped into 3 categories (0-15 marks, 16-24 marks, and 25-31 marks).

[5] Pupils who use British Sign Language or other sign-supported communications, or who are non-verbal / selectively-mute, have recently moved to the country and unable understand English letters/sounds, and other pupils who show no understanding of grapheme/phoneme correspondences are not required to take the phonics screening check.

Figure 14: PIRLS performance between the 10th and 90th percentiles for pupils in England by their prior performance in the year 1 phonics screening check



Phonics Screening Check Mark	Percentage of pupils	10th percentile	50th percentile	90th percentile	Range
40/40	13.8%	541	605	670	128
39/40	14.0%	516	589	657	141
38/40	13.8%	492	569	647	155
37/40	12.8%	481	564	639	158
36/40	10.3%	477	565	633	155
35/40	8.7%	461	560	635	174
34/40	6.7%	453	539	616	163
33/40	4.4%	461	538	598	137
32/40	2.7%	424	521	649	225
25–31	4.4%	426	516	593	167
16–24	3.9%	392	492	585	193
0–15	4.4%	359	463	565	206

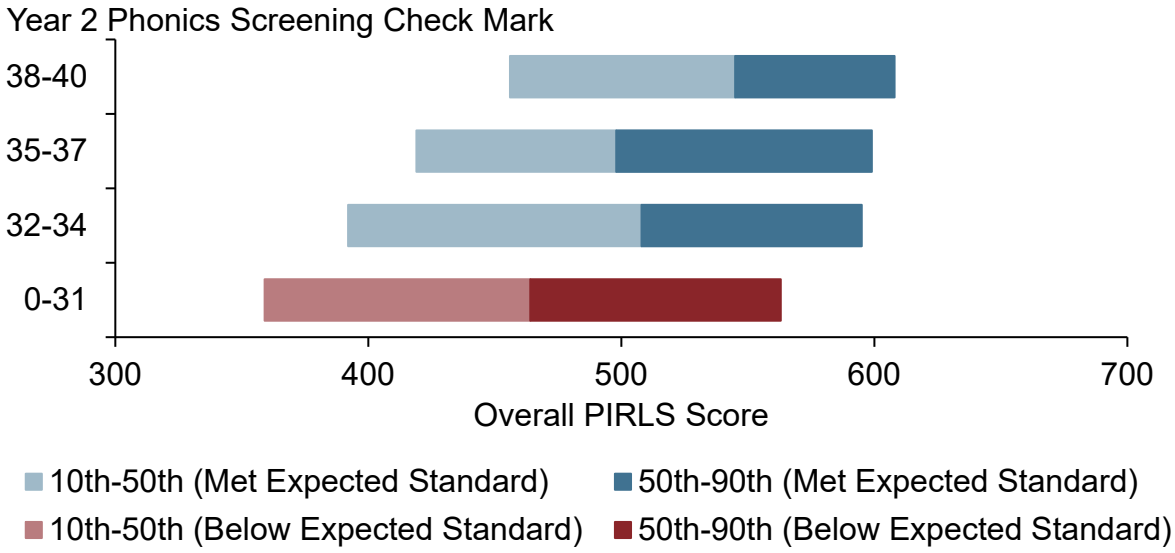
Pupils scoring less than 32/40 did not meet the expected standard.
Range calculated as 90th – 10th percentile. Some results may appear inconsistent due to rounding.
Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Pupils who answered all 40 questions correctly in the year 1 phonics screening check had a median PIRLS score of 605, with a relatively narrow distribution of performance between the 10th and 90th percentiles. By contrast, there was a much wider range of performance between the 10th and 90th percentiles among pupils that scored around, or below the expected standard threshold of 32/40. The overall correlation between phonics marks and PIRLS scores was 0.46, indicating a moderate, statistically significant relationship between performance in the 2 assessments.

Pupils who do not meet the expected standard in year 1, or who did not participate in the phonics screening check in year 1 are normally expected to participate in the screening check in year 2. In the PIRLS cohort, a total of 519 pupils participated in the year 2 phonics screening check near the end of the 2018/2019 academic year.

Figure 15 shows how pupils' performance in the year 2 phonics screening check relates to their performance in PIRLS. Due to the low number of pupils who participated in a year 2 phonics screening check, data has been combined into 4 groups; pupils scoring between 38 and 40, pupils scoring between 35 and 37, pupils scoring between 32 and 34, and the remaining pupils who scored less than 32, and therefore did not meet the expected standard. As with the year 1 phonics screening check data shown in **Figure 14**, there is generally a wider range in performance for pupils who scored below, or close to the expected standard of 32 marks out of 40, and narrower for pupils scoring at the upper end of the scale. Stronger performance in the year 2 phonics screening check was generally associated with stronger performance in PIRLS 2021.

Figure 15: PIRLS performance between the 10th and 90th percentiles for pupils in England by their prior performance in the year 2 phonics screening check



Phonics Screening Check Mark	Percentage of pupils	10th percentile	50th percentile	90th percentile	Range
38–40	22.3%	456	545	608	152
35–37	22.0%	419	498	599	180
32–34	20.5%	392	508	595	204
0–31	35.2%	359	464	563	204

Pupils scoring less than 32/40 did not meet the expected standard.
Range calculated as 90th – 10th percentile. Some results may appear inconsistent due to rounding.
Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

5.2 PIRLS performance by prior performance in key stage 1 reading

At the end of Year 2, teachers of pupils in state-maintained schools and academies provide a judgement as to how well their pupils are performing in reading, writing, mathematics, and science relative to an 'expected standard'. This expected standard is comprised of a series of statements about what the pupil can do. For example, a pupil who is performing at the expected standard in reading can "accurately read most words that contain 2 or more syllables, that contain common suffixes, and most common exception words. They can also read aloud accurately without overt sounding and blending, and fluently enough so that their reading of age-appropriate books is focused on understanding rather than the decoding of individual words. Additional statements are provided to allow teachers to judge whether pupils are working at greater depth within the expected standard, or whether they are working towards the expected standard.

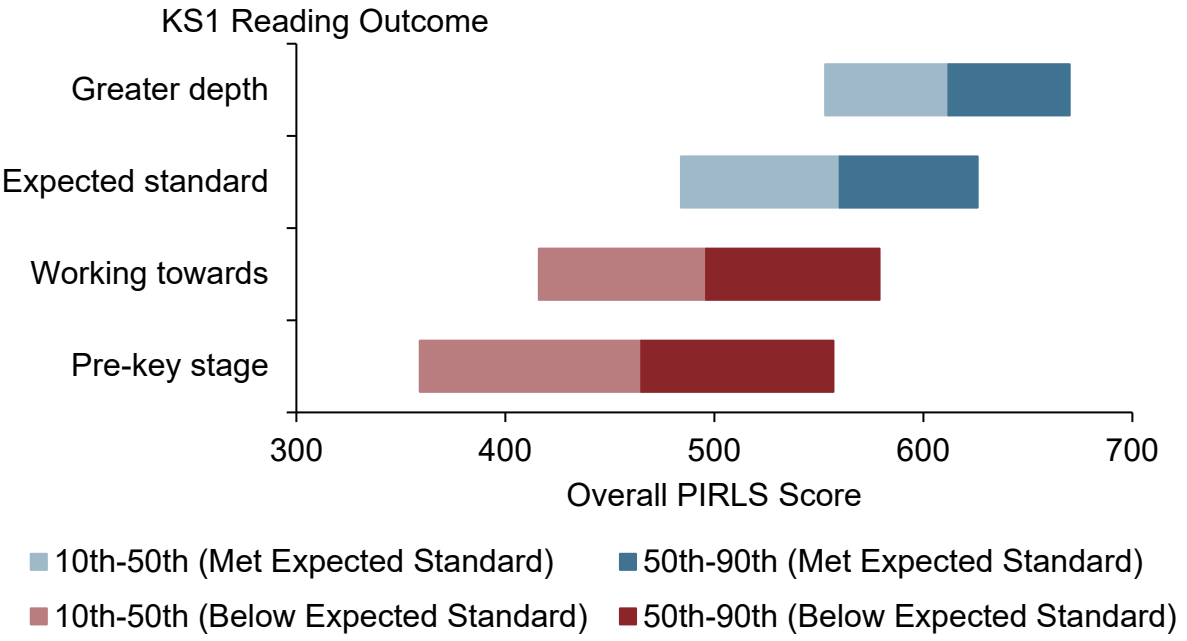
Teacher-assessed key stage 1 (KS1) reading assessment data was available for 3,669 out of the 4,150 pupils in England's PIRLS 2021 cohort. These pupils were assessed by their teachers near the end of year 2, in the 2018/2019 academic year. Teachers assessed whether their pupils were working 'towards the expected standard', 'at the expected standard', or at a 'greater depth within the expected standard'. Some pupils were also classified as working at pre- key stage levels – at the time, these pupils would have been following a slightly different curriculum than the typical key stage 1 reading curriculum.

In England's PIRLS 2021 cohort, 22.3% of the pupils were evaluated as working either towards the expected standard, or at pre- key stage levels below this, while 27.5% were evaluated as working at a 'greater depth' within the expected standard.

Figure 16 shows how pupils' teacher assessed grades in KS1 reading related to performance in PIRLS. Data for pupils who were classified as working at the expected standard in reading, or at a greater depth within the expected standard are presented in blue in the top 2 rows of the figure, while the data for pupils who were classified as working below the expected standard are presented in red in the bottom 2 rows.

Pupils who were classified as reading at a greater depth within the expected standard at the end of year 2 had strong levels of performance in PIRLS, with over 90% of these pupils scoring above the 'High' International Benchmark score of 550, and there generally being a narrow range of performance between the 10^{th} and 90^{th} percentiles of PIRLS performance. By contrast, there was a much wider range in PIRLS performance for pupils who were classified as 'working towards' the expected standard in reading at the end of year 2. The median score of pupils who were classified as working at the expected standard was 560, roughly in line with England's average score (558) in PIRLS 2021.

Figure 16: PIRLS performance between the 10th and 90th percentiles for pupils in England by their key stage 1 reading outcome



Key stage 1 reading outcome	Percentage of pupils	10th percentile	50th percentile	90th percentile	Range
Greater depth	27.5%	553	612	670	117
Expected standard	50.2%	484	560	626	142
Working towards	17.9%	416	496	579	162
Pre- key stage	4.4%	359	465	557	197

Greater depth *= greater depth within the expected standard.*
Expected standard *= working at the expected standard.*
Working towards *= working towards the expected standard.*
Pre- key stage *= not currently working towards the expected standard.*
Range calculated as 90th – 10th percentile. Some results may appear inconsistent due to rounding.
Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

5.3 Contextualisation: Approaches to reading screening across education systems

The ways in which pupils' reading progress is monitored in the primary school vary across education systems. In almost every education system that participates in PIRLS, pupils' reading progress is monitored at a national level, typically relying on qualitative monitoring by teachers, national tests, standardised diagnostic assessments, or a combination of these approaches (Reynolds et al., 2022). The monitoring of pupils' reading progress across all education systems involves both formative and summative assessment, and in most cases reports on both pupil-level and system-level results. In a number of participating education systems, additional screening measures are taken

early to identify individualised reading needs of pupils. **Box 5.1** discusses examples of different approaches to identifying pupils' reading needs from selected education systems.

Box 5.1 Screening for reading difficulties in the early years

The early identification of pupils who have difficulty reading is understood to be an important step in ensuring appropriate support is provided so that all pupils progress well in reading (January & Klingbeil, 2020). Across participating education systems, a number of different screening methods are applied in order to identify pupils who require additional support and/or interventions related to reading. These typically happen at one of the following stages, before beginning primary school (i.e., school readiness), in the early grades (e.g., year 1-2), or at the end of a foundational phase (e.g., year 3 and/or 6).

School readiness screening typically takes place before children enter primary school, in most cases at 5 or 6 years of age. These screening tests often do not focus on reading, but rather on the oral language skills foundational to reading development. In Bulgaria, all pupils are evaluated for their school readiness at the start of their first year of primary school for teachers to differentiate pupils' individual needs (Mavrodieva & Damyanova, 2022). Similarly, in Denmark, pupils participate in mandatory language screenings at the beginning of grade 0, when they are 6 years old (Fougt et al., 2022). The Flemish community of Belgium has a similar mandatory test when children enter primary school at 5 years old, an oral language screening known as the KOALA test (Denies et al., 2022). In Belgium, schools are encouraged to compare the results of external tests such as KOALA to their classroom-based methods to obtain more objective assessments of pupils' progress.

Continues on next page

Box 5.1 (continued)

Early grade reading screening, such as the phonics screening check conducted in England, usually takes place at the end of the first or second year of primary school. These screenings are more focused on reading rather than oral language skills and typically include evaluations of single word reading, phonics, letter-sound recognition, and/or decoding skills. The phonics screening check in Australia, which takes place in year 1, was implemented to support reading progress following concerns over declining reading progress was suggested by international assessments such as PISA (Knowles & Hillman, 2022). South Africa and North Macedonia both use the Early Grade Reading Assessment (EGRA) to assess pupils' pre-reading and reading skills in the early grades (Mihajlovska, 2022; van Staden & Roux, 2022). In both cases, EGRA is used as a method of identifying system-wide needs for interventions in reading as well as identifying individual pupil needs.

In some education systems, diagnostic screening takes place throughout primary school in order to check reading 'milestones' and ensure that pupils are given adequate support as they progress each year. Oman, Latvia, Qatar and the United Arab Emirates are examples of systems that apply regular screening assessments (e.g., annually) to identify and support pupils' needs (Reynolds et al., 2022). In many cases, these assessments are focused on reading as well as mathematics skills.

There are also contexts that do not implement screening methods at the national level for all pupils. In many cases teachers use classroom-based methods to identify the reading needs of their pupils in order to inform interventions where necessary. In Slovakia, for example, if teachers notice that pupils are having difficulties developing reading skills, they can recommend that pupils then undergo an evaluation at a pedagogical-psychological counselling and prevention centre (Kopas, 2022).

6 Reading performance by pupil characteristics

Chapter overview

This chapter uses linked data from the NPD and data from the PIRLS 2021 pupil questionnaires to investigate the associations between pupil characteristics and pupil performance in PIRLS. Using these linked datasets, we investigate which pupil characteristics with the potential to influence reading achievement (including gender, age, eligibility for FSM within the last six years, ethnic group, whether or not pupils are classified as learning EAL, and books at home) are associated with PIRLS reading performance. These relationships, as well as the influence of prior attainment, are considered all together alongside school context (attainment band, from low to high) using multiple regression. Then relationships are considered individually for a selection of the pupil characteristics to better understand these associations. Particular attention is given to the gender gap and any widening or narrowing of this gap over time. The chapter ends with a discussion of relationships between pupil background characteristics and reading performance from an alternative education system to provide additional insight into the situation in England.

Key findings

- After accounting for pupil characteristics, prior attainment and school attainment band all together, the most powerful predictors of PIRLS 2021 overall reading score were pupils' year 1 phonics screening check mark (with higher marks predicting higher PIRLS scores), books at home (with more books predicting higher PIRLS scores) and FSM eligibility in the past 6 years (with FSM-eligible pupils scoring about 23 points lower than FSM-ineligible peers on average). Being born earlier in the school year, being in the 'Mixed' ethnic group and being in mid-high and high performing schools were all significantly associated with higher overall reading performance, but these were much weaker predictors. No other relationships were significant based on multiple regression results.
- Girls have continued to outperform boys as in previous cycles of PIRLS, with significant differences both in terms of overall performance and all PIRLS subscales except for the Informational Purpose Scale.

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Chapter overview (continued)

- The gender gap has continued to narrow in PIRLS 2021 overall. For high (90th percentile) and low (10th percentile) performers, there was very little change in the gender gap in England since PIRLS 2016.
- Pupils in the 'Mixed' ethnic group scored highest on average, 17 points higher than pupils from the 'White' or 'Black' ethnic groups who scored lowest on average in PIRLS 2021.
- Being born earlier in the school year tended to correspond to higher PIRLS scores on average, with about a 20 point difference between pupils born in September and those born the following August.

6.1 The relationship between PIRLS performance and pupil characteristics

In this chapter, we begin by looking at how several different pupil background characteristics predict the performance of pupils in England in PIRLS 2021. This includes characteristics such as pupil age, gender, major ethnic group, language via an indicator of whether a pupil has EAL, and socioeconomic background via pupils' eligibility for FSM within the past 6 years, as well as pupils' performance in the year 1 phonics screening check. We also include school attainment bands (based on school mean attainment in PIRLS 2021) to account for the school contexts of the pupils in the PIRLS 2021 sample.

While this chapter later includes consideration of each of these pupil characteristics in isolation, we begin by exploring how each of these characteristics independently predicts performance in PIRLS 2021 when we consider them all simultaneously. We do this using a method called multiple linear regression, which helps to take account of the complex relationships between predictors. For example, it is possible that pupils of one ethnic group might score significantly higher on average than pupils of another ethnic group, but a multiple linear regression analysis might find that these apparent differences are actually accounted for by some other pupil characteristic such as eligibility for FSM, and that the ethnic group difference is diminished after including free school meal eligibility together with ethnic group in the same analysis.

The multiple linear regression analysis of data from England's pupils in PIRLS 2021 focuses on 8 pupil characteristics and 1 school context variable. These were:

- Pupil mark (out of 40) in the year 1 phonics screening check
- Pupil age (in years, e.g., 10.25 means 10 years and 3 months) as recorded in PIRLS

- Whether a pupil had been eligible for FSM within the last 6 years as recorded in the NPD
- Pupil gender as recorded in PIRLS ('Female' and 'Male')
- Pupil major ethnic group as recorded in the NPD ('White', 'Black', 'Asian', 'Mixed', and 'Other')
- Whether a pupil has EAL or not as recorded in the NPD
- How many books a pupil reported having at home as recorded in PIRLS ('0-10', '11-25, one bookshelf', '26-100, one bookcase', '101-200, two bookcases', and 'More than 200, three or more bookcases').
- The performance of the school that the pupil attends (corresponding to 5 bands of attainment in PIRLS 2021 from 'Low-Performing' to 'High-Performing'[6]; see section **8.2.1** for more information).

For each of the pupil characteristics that are categorical in nature (e.g., 'Yes/No', 'Female/Male', or 'White/Black/Asian/Mixed/Other', etc.), a reference category must be selected so that all other categories are compared to that one in a multiple regression analysis. For this analysis, almost all of the selected reference categories are, as is quite common practice, the largest groups. This means that the reference categories are pupils who were not eligible for FSM within the last 6 years, female pupils, pupils from the 'White' ethnic group, pupils without EAL. The only exceptions to this were for the 2 characteristics with low to high categories; these were pupil-reported books at home, where the reference category was chosen to be the lowest (ten or fewer books), and school attainment band (where 'Low-performing' was chosen as the reference category). In both cases, the lowest rated category was chosen, to look at how each increase in the number of books at home, or school-performance, related to changes in PIRLS performance.

Table 13 provides a summary of the pupils included in the regression analysis. Pupils who did not have complete data for all of the variables listed above were not included in the multiple regression analysis. In total, this meant that 3,479 pupils were included, and their average PIRLS score was 558, identical to the average score for England overall (558) based on the overall PIRLS 2021 sample of 4,150 pupils. Further details regarding missing data from the NPD are available in Appendix B.

[6] There were originally 6 school attainment bands in PIRLS, one of which corresponded to independent schools. This independent school band does not appear in the multiple regression model because NPD data is not available for pupils in independent schools, so for the purposes of this chapter there were 5 school attainment bands.

Table 13: Description of pupil characteristics variables explored in the regression analysis

Pupil characteristic	Total N	Weighted %
Year 1 phonics check mark	3,479	100.0
Pupil age (in years)	3,479	100.0
Ever6 FSM – No	2,568	73.9
Ever6 FSM – Yes	911	26.1
Gender – Female	1,786	51.0
Gender – Male	1,693	49.0
Ethnic group – White	2,566	77.1
Ethnic group – Black	168	4.3
Ethnic group – Asian	476	11.3
Ethnic group – Mixed	210	5.7
Ethnic group – Other	59	1.6
EAL – No	2,766	82.0
EAL – Yes	713	18.0
Books at home – 0-10	437	12.0
Books at home – 11-25	861	24.8
Books at home – 26-100	1,160	33.4
Books at home – 101-200	618	17.6
Books at home > 200	403	12.2
School – Low performing	457	12.3
School – Mid-low performing	699	21.2
School – Middle performing	837	25.0
School – Mid-high performing	808	21.7
School – High-performing	678	19.9

Please note that these are counts and percentages after removing cases with missing data on any variable, for a total of N=3479 cases (having dropped 671 cases missing data on at least one variable). This differs from the total count for later tables in this chapter, where only cases missing data on the variables of interest were omitted for each specific table.
Because of rounding, some results may appear inconsistent.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 14 displays the results of the multiple regression analysis. The unstandardised coefficients (b) indicate how many points' difference corresponds to a one-unit change in a particular variable, or (for categorical variables) how many points' difference there is between a particular category and the reference category. For example, after accounting for other characteristics, the analysis suggests that pupils who were eligible for FSM within the last 6 years scored on average about 23 points lower than those who were not eligible, after accounting for all of the other variables in the model. As another example, an increase of one point on the year 1 phonics screening check was associated with an

almost 4 point gain in PIRLS. In addition to these interpretations of unstandardised coefficients, the standardised beta coefficients (β) provide a measure of 'effect size', which in multiple linear regression allows us to compare across predictor variables and determine which are more or less powerful predictors of the outcome (PIRLS 2021 overall reading score).

Table 14: Regression analysis of pupil characteristics relative to PIRLS 2021 score in England

Pupil characteristic	b	b – statistically significant at confi-dence level	β	β – statistically significant at confi-dence level
(Constant)	234.68	99.9%	n/a	n/a
Year 1 phonics check mark	3.64	99.9%	0.34	99.9%
Pupil age (in years)	14.94	99.9%	0.06	99.9%
Ever6 FSM – Yes	-22.72	99.9%	-0.13	99.9%
Gender – Male	-3.26	n/a	-0.02	n/a
Ethnic group – Black	10.23	n/a	0.03	n/a
Ethnic group – Asian	8.19	n/a	0.03	n/a
Ethnic group – Mixed	14.7	99%	0.05	99%
Ethnic group – Other	21.93	n/a	0.04	n/a
EAL – Yes	2.41	n/a	0.01	n/a
Books at home – 11-25	25.1	99.9%	0.14	99.9%
Books at home – 26-100	39.4	99.9%	0.25	99.9%
Books at home – 101-200	48.2	99.9%	0.24	99.9%
Books at home > 200	55.65	99.9%	0.24	99.9%
School – Mid-low performing	11.86	n/a	0.06	n/a
School – Middle performing	8.25	n/a	0.05	n/a
School – Mid-high performing	18.57	95%	0.1	95%
School – High-performing	19.51	95%	0.1	95%

b = unstandardised regression coefficient
β = standardised regression coefficient
n/a = not statistically significant

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Performance in the year 1 phonics screening was found to be the strongest independent predictor of performance in PIRLS. After accounting for all other pupil characteristics, a difference of 10 points on the year 1 phonics screening check was associated with a difference of about 36 points in PIRLS 2021 overall reading performance.

The second strongest predictor of overall reading performance in PIRLS 2021 was the number of books at home. Pupils who reported having over 200 books at home scored about 56 points higher than those who reported having 10 or fewer books at home, while those who reported having 101 to 200 books, 26 to 100 books, and 11 to 25 books at home scored about 48 points, 39 points and 25 points higher than those who reported having 10 or fewer books at home, respectively.

The third strongest predictor of PIRLS overall reading score was eligibility for FSM in the last 6 years. Pupils who were eligible scored, on average, about 23 points lower than those who were not.

The relationship between school attainment band and individual pupil reading performance was not uniform across bands. Only the mid-high performing and high performing bands of school attainment were significantly different from the low performing band, and these were not strong predictors of individual performance in PIRLS 2021.

Of the major ethnic groups included in the multiple regression analysis, only the ‘Mixed’ ethnic group performed significantly differently to the ‘White’ reference group, scoring approximately 15 points higher on average. Ethnic groups in general were not strong predictors of PIRLS reading performance.

Pupil age was a significant predictor of PIRLS reading performance, but not a strong predictor based on the standardised coefficient. Being one month older corresponded to approximately a 1.2 point gain in PIRLS overall reading score.

EAL status and gender were not significant predictors of pupils’ overall reading performance in PIRLS 2021 after accounting for all of the other above variables.

Together, these pupil and school characteristics explained approximately 27% of the variation in PIRLS performance.

6.2 Performance by gender

6.2.1 Overall performance by gender

In keeping with previous cycles of PIRLS, girls significantly outperformed boys in the vast majority of education systems participating in PIRLS 2021 (Mullis et al., 2023). This was

the case in England, where girls scored, on average, 10 points higher than boys overall. Girls also scored higher than boys in all comparator education systems, as **Table 15** shows. In Hong Kong the gender gap was slightly lower (8 points) than in England, while in Singapore and Australia the gap was wider (18 and 17 points, respectively).

Gender gaps in overall performance varied substantially in size across the education systems participating in PIRLS 2021. Considering only English-speaking education systems, for example, there was no significant difference in the United States, a significant difference in Ireland very similar to that in England, and a difference in Northern Ireland of more than double that in England (Mullis et al., 2023).

Table 15: Average performance of girls and boys in England and comparator systems in PIRLS 2021

Education system	Girls' Average	Boys' Average	Gender Gap
England	*562	553	10
Singapore	*596	578	18
Hong Kong	*577	569	8
Australia	*549	532	17
International Median	*523	512	15

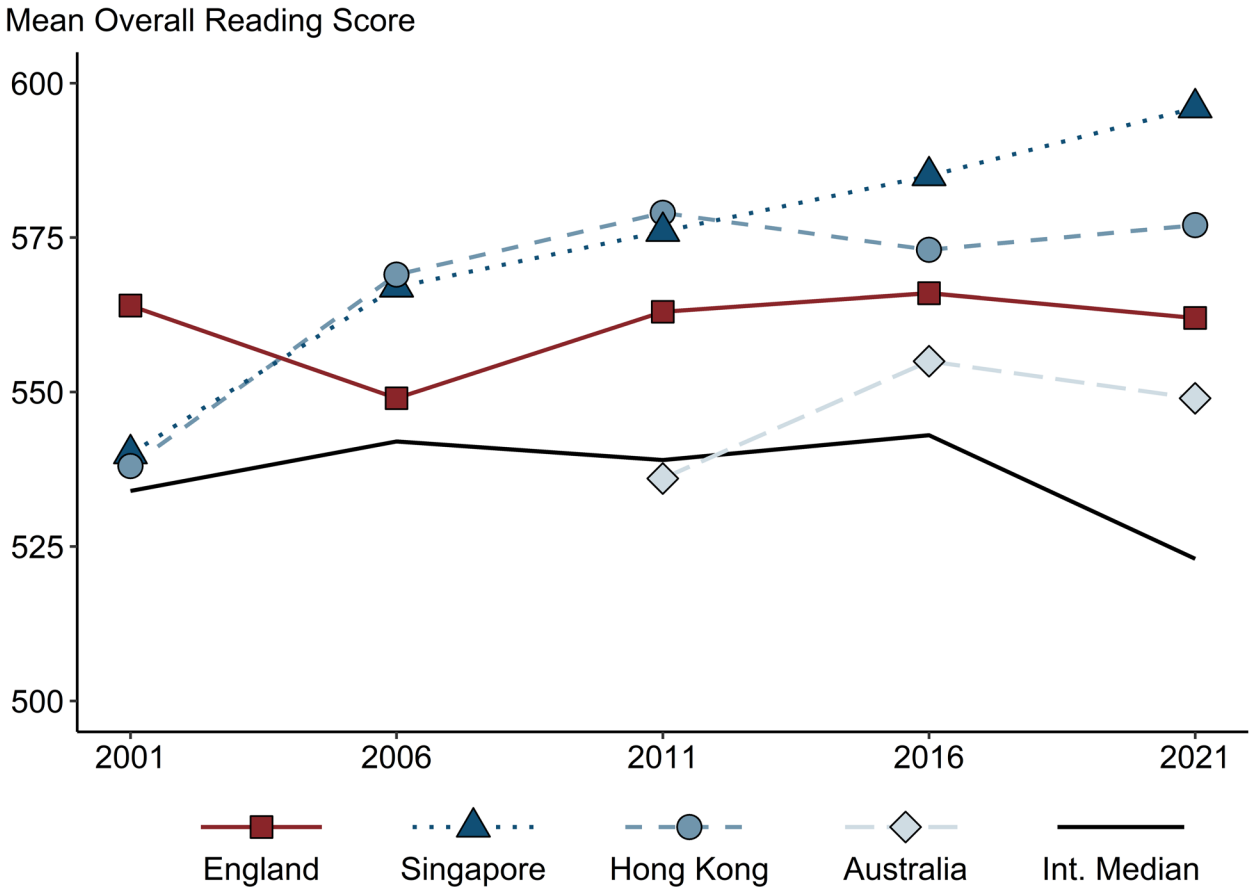
Asterisks (*) indicate that the average score for girls in that education system was significantly higher than the score for boys.
International Median gender-gap is the median gender-gap across education systems, not the gap between girls' and boys' medians.

Source: IEA's PIRLS 2021

6.2.2 Trend performance by gender

As **Figure 17** shows, girls' reading performance in England has remained relatively stable across PIRLS cycles, with the exception of significantly lower performance in the 2006 cycle (compared to PIRLS 2021). The overall performance of girls in England was slightly lower in 2021 than in 2016, but this difference was very slight (4 points) and not statistically significant. The International Median has also remained fairly stable across cycles until PIRLS 2021, in which the median score across education systems was 20 points lower than in the 2016 cycle. This may have been due to the influence of COVID-19 on education and data collection across participating education systems. In Hong Kong, girls' reading performance has been fairly stable except for a significantly lower start in the first (2001) cycle compared to PIRLS 2021. By contrast, in Singapore there has been a pattern of consistent increase in girls' reading performance with each cycle of PIRLS, all significantly different from girls' performance in PIRLS 2021. The overall performance of girls in Australia was significantly lower in the 2011 cycle than in the 2021 cycle, but the difference between 2016 and 2021 cycles was not significant.

Figure 17: Average performance of girls in England and comparator systems across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	564	*549	563	566	562
Singapore	*540	*567	*576	*585	596
Hong Kong	*538	569	579	573	577
Australia	n/a	n/a	*536	555	549
International Median	534	542	539	543	523

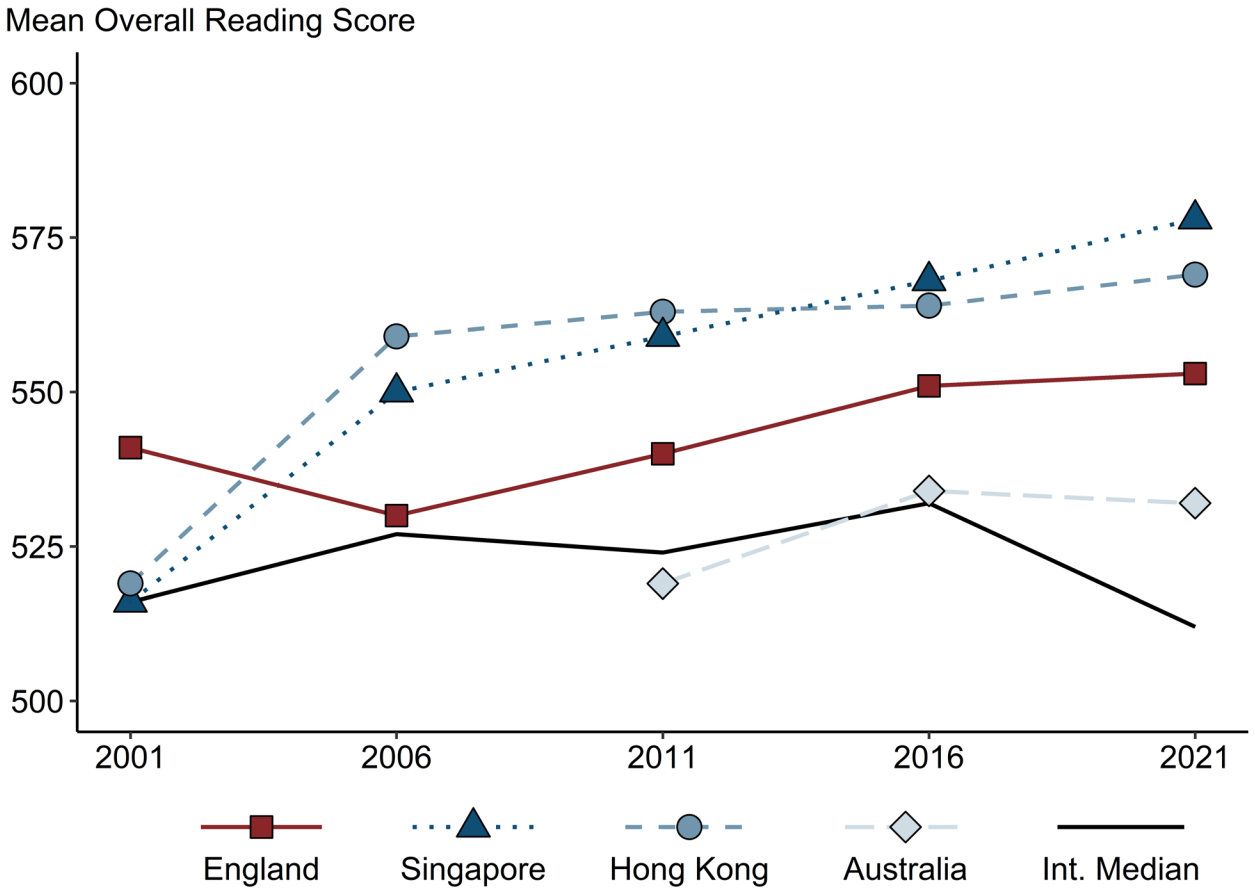
Asterisks (*) indicate that the score shown is significantly different to that system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

Boys' reading performance trends over time across PIRLS cycles has been quite similar to girls' trends in some education systems (see **Figure 18**). England was a bit of an exception to this, as boys' performance decreased slightly between 2001 and 2006, increased steadily from 2006 through to the 2011 and 2016 cycles, and then remained similar between 2016 and 2021. In Hong Kong, boys' scores have been fairly stable except for a lower start in the 2001 cycle, significantly so compared to Hong Kong's performance in PIRLS 2021. Like girls, boys in Singapore showed a similar pattern of consistent and significant increase in reading performance across PIRLS cycles. Again like girls, boys in

Australia performed significantly lower in the 2011 cycle than in PIRLS 2021, but the difference between 2016 and 2021 cycles was not significant. Fluctuations in the International Median have been similar for boys and girls despite girls' higher median scores across education systems in each cycle.

Figure 18: Average performance of boys in England and comparator systems across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	*541	*530	*540	551	553
Singapore	*516	*550	*559	*568	578
Hong Kong	*519	559	563	564	569
Australia	n/a	n/a	*519	534	532
International Median	516	527	524	532	512

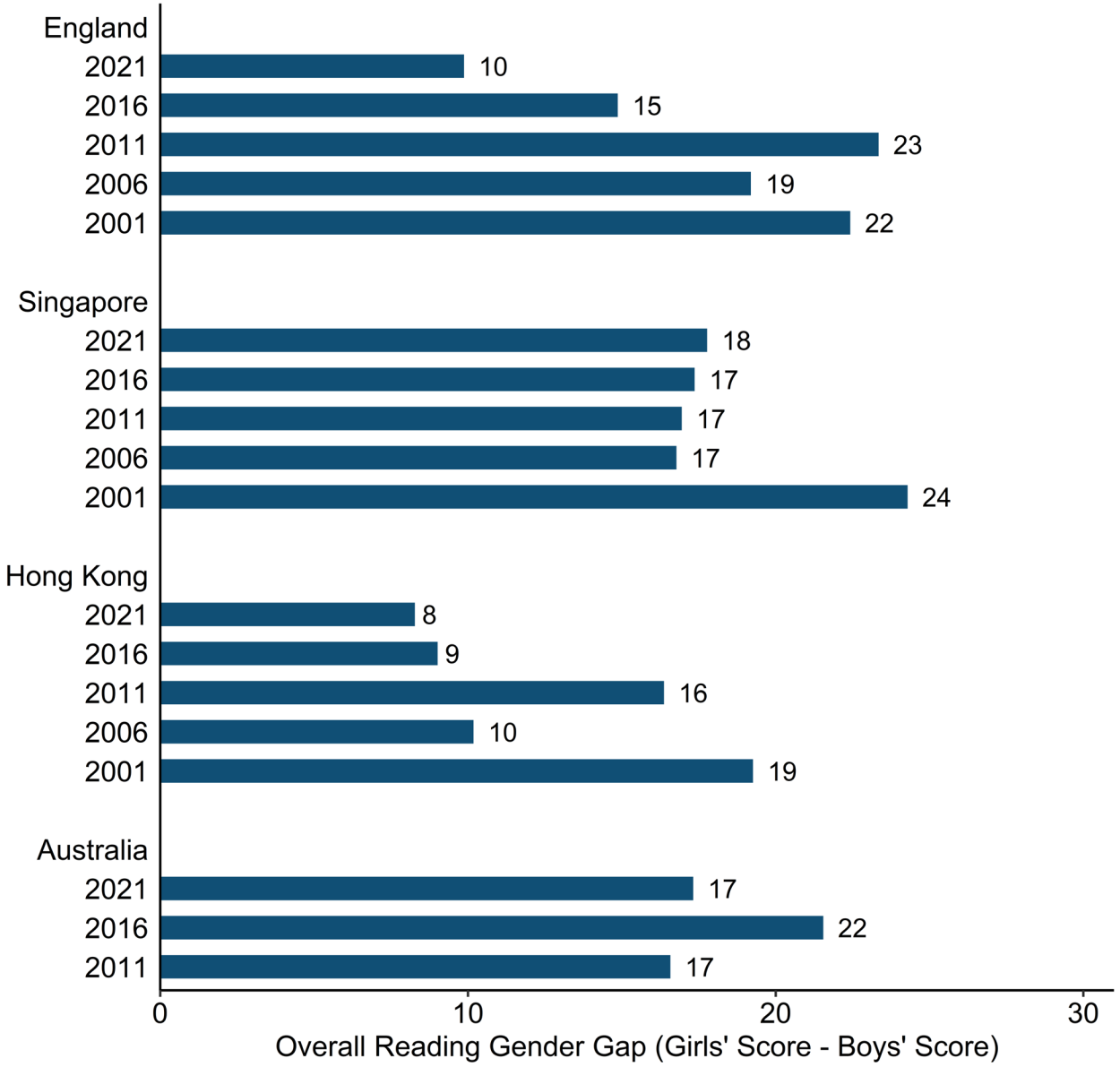
Asterisks (*) indicate that the score shown is significantly different to that system's score for PIRLS 2021.

Source: IEA's PIRLS 2021

Given the relative stability of girls' reading performance in England alongside the general increase for boys across cycles of PIRLS, it should come as no surprise that the gender gap has narrowed over time across recent cycles after some fluctuation across PIRLS 2001, 2006 and 2011 as displayed in **Figure 19**. This pattern is distinct from that of

comparator education systems. Singapore saw a dramatic narrowing of the gender gap after the 2001 cycle, as did Hong Kong except for a noticeable and temporary increase in the gender gap in the 2011 cycle. Given only 3 comparable cycles for Australia, it is difficult to firmly establish a trend in the gender gap, with some fluctuation between 2011, 2016 and 2021 cycles.

Figure 19: Gender gap in England and comparator systems across PIRLS cycles



Education system	2001	2006	2011	2016	2021
England	22	19	23	15	10
Singapore	24	17	17	17	18
Hong Kong SAR	19	10	16	9	8
Australia	n/a	n/a	17	22	17

Gender gaps calculated as average girls' score – average boys' score in each cycle

Source: IEA's PIRLS 2021

Looking more widely at English-speaking education systems to which direct statistical comparisons are not possible due to different data collection timings, considerable variation in gender-gap trends over time are apparent. In Ireland, the gender gap has remained fairly stable over time, for example, while in Northern Ireland it has widened, and in the United States it has narrowed to the point of statistical insignificance.

6.2.3 Performance by gender on reading purpose scales

As was the case for overall reading performance, girls outperformed boys on the Literary Purpose Scale in PIRLS 2021. This was true in England and comparator education systems, and differences were all significant as **Table 16** shows. The gender gaps on this scale in Singapore and Australia were nearly double those in England and Hong Kong. Girls also tended to outperform boys on the Informational Purpose Scale across England and comparator education systems, as **Table 17** shows. However, unlike the gender gaps on the Literary Purpose Scale, the gender gaps on the Informational Purpose Scale were not significant in England or in Hong Kong.

Table 16: Performance of girls and boys in England and comparator systems on the Literary Purpose Scale in PIRLS 2021

Education system	Overall Scale Score	Girls' Scale Score	Boys' Scale Score	Gender Gap
England	558	*565	551	14
Singapore	591	*604	580	25
Hong Kong	564	*570	558	12
Australia	543	*557	530	26
International Median	520	525	511	18

Asterisks (*) indicate that the average score for girls in that education system was significantly higher than the score for boys. This is not calculated for the International Median.
International Median gender-gap is the median gender-gap across education systems, not the gap between girls' and boys' medians.
Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 17: Performance of girls and boys in England and comparator systems on the Informational Purpose Scale in PIRLS 2021

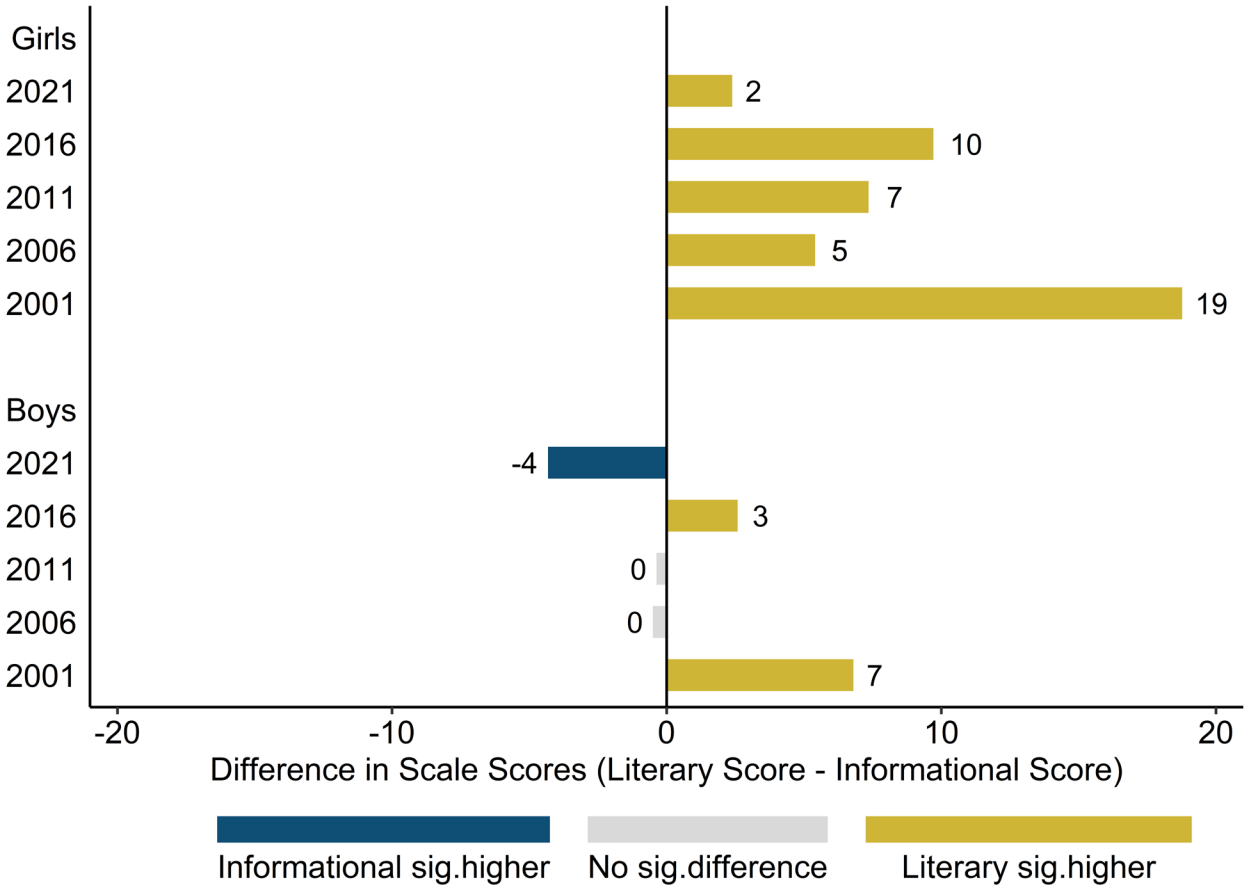
Education system	Overall Scale Score	Girls' Scale Score	Boys' Scale Score	Gender Gap
England	559	563	555	8
Singapore	586	*594	579	15
Hong Kong	582	585	580	5
Australia	539	*544	534	10
International Median	520	520	513	11

Asterisks (*) indicate that the average score for girls in that education system was significantly higher than the score for boys. This is not calculated for the International Median.
International Median gender-gap is the median gender-gap across education systems, not the gap between girls' and boys' medians.
Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Figure 20 displays the differences across all PIRLS cycles between scores on the Literary and Informational Purpose Scales for girls and for boys. For girls, the Literary Purpose Scale scores have remained significantly higher than those on the Informational Purpose Scale over time, but there has been a substantial decrease in that difference from PIRLS 2001 to PIRLS 2021 (from 19 to 2). For boys, performance on the Literary Purpose Scale was significantly higher than on the Informational Purpose Scale in the 2001 cycle, but this difference was only a little over a third of the corresponding difference for girls. In later cycles, there was no significant difference between scores on these 2 scales for boys in 2006 and 2011, a very small difference in 2016, and a reversal in the most recent cycle so that boys scored significantly higher on the Informational Purpose Scale. This helps to explain the lack of difference in scores across these scales in PIRLS 2021 when gender is not taken into consideration (as reported in Chapter 3); that is, with girls scoring slightly though not significantly higher on Literary Purpose, and boys scoring significantly higher on Informational Purpose, there appeared to be very little overall difference in scores.

Figure 20: Differences in Literary and Informational Purpose Scale scores across PIRLS cycles for girls and boys in England



Source: IEA's PIRLS 2021

Gender	2001	2006	2011	2016	2021
Girls	19	5	7	10	2
Boys	7	0	0	3	-4

Differences calculated as Literary Scale score – Informational Scale score

Source: IEA's PIRLS 2021

6.2.4 Performance by gender on comprehension process scales

Similar to the patterns reported above for overall reading performance and Literary Purpose, girls scored significantly higher than boys on the Retrieving and Straightforward Inferencing Process Scale in PIRLS 2021 in England as well as in comparator education systems (see **Table 18**). Gender gaps were similar on this size to those for overall reading performance, and mirrored the same pattern as for the other scales reported above, with larger differences between girls' and boys' scores in Singapore and Australia and smaller (though still significant) differences in England and Hong Kong. As **Table 19** shows, the situation for gender gaps on the Interpreting, Integrating and Evaluating

Process Scale was almost identical to that for the Retrieving and Straightforward Inferencing Process Scale across England and comparator education systems.

Table 18: Performance of girls and boys in England and comparator systems on the Retrieving and Straightforward Inferencing Process Scale in PIRLS 2021

Education system	Overall Scale Score	Girls' Scale Score	Boys' Scale Score	Gender Gap
England	554	*559	549	11
Singapore	584	*593	575	18
Hong Kong	577	*581	573	8
Australia	534	*542	525	17
International Median	520	523	512	16

Asterisks (*) indicate that the average score for girls in that education system was significantly higher than the score for boys. This is not calculated for the International Median.
International Median gender-gap is the median gender-gap across education systems, not the gap between girls' and boys' medians.
Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 19: Performance of girls and boys in England and comparator systems on the Interpreting, Integrating and Evaluating Process Scale in PIRLS 2021

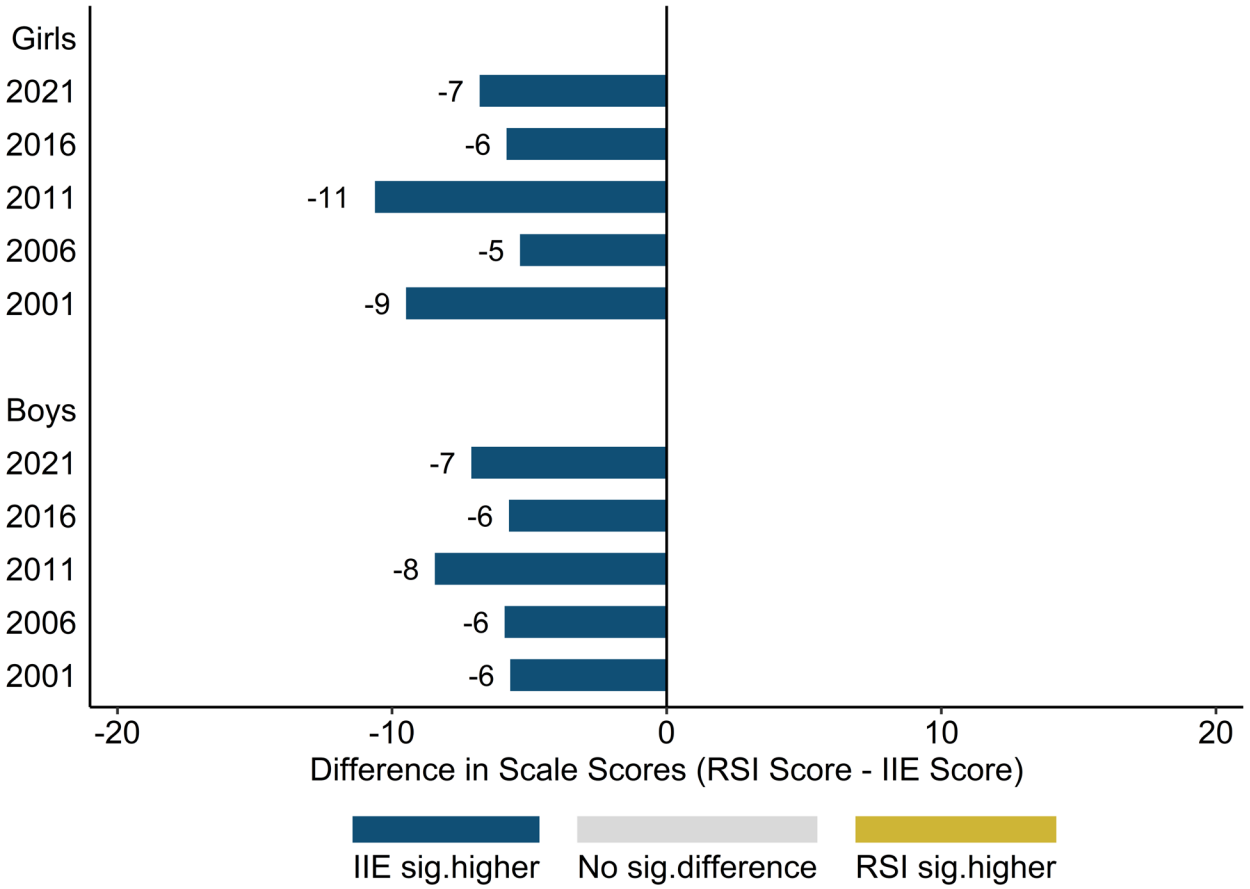
Education system	Overall Scale Score	Girls' Scale Score	Boys' Scale Score	Gender Gap
England	561	*566	556	10
Singapore	591	*599	583	16
Hong Kong	572	*576	569	7
Australia	547	*557	537	19
International Median	520	523	511	14

Asterisks (*) indicate that the average score for girls in that education system was significantly higher than the score for boys. This is not calculated for the International Median.
International Median gender-gap is the median gender-gap across education systems, not the gap between girls' and boys' medians.
Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Although there has been some fluctuation over time, the differences between scores on the Reading and Straightforward Inferencing Process and the Interpreting, Integrating and Evaluating Process Scales have remained relatively stable over time since the first cycle of PIRLS for both boys and girls, with the exception of a spike in the 2011 cycle for girls. Overall, throughout every cycle including PIRLS 2021, both boys and girls have performed better on the Interpreting, Integrating and Evaluating Process Scale (see **Figure 21**).

Figure 21: Differences in RSI and IIE Process Scale scores across PIRLS cycles for girls and boys in England



Gender	2001	2006	2011	2016	2021
Girls	-9	-5	-11	-6	-7
Boys	-6	-6	-8	-6	-7

Differences calculated as RSI scale score – IIE scale score

Source: IEA's PIRLS 2021

6.2.5 Performance by gender at 10th and 90th percentiles

Figure 22 displays the trends in boys' and girls' scores across PIRLS cycles at the 10th percentile, while **Figure 23** displays the corresponding trends at the 90th percentile. While the overall gap in reading performance between girls and boys was significant. as reported in **Table 15**, the gender gap was not significant when considering just the lowest (10th percentile) and highest (90th percentile) performers. To some extent, this is the result of a narrowing of the gaps between girls and boys amongst both high and low performers. However, it is also a consequence of the larger statistical uncertainty in analysing performance only at the extremes of the range of scores – in other words, looking only at the 10th and 90th percentiles involves analysing information from smaller

groups, and as group size gets smaller we need a larger difference for it to be able to be statistically significant.

Figure 22: Performance trends of girls and boys in England at the 10th percentile across PIRLS cycles

Gender	2001	2006	2011	2016	2021
Girls	454	433	454	464	465
Boys	421	417	427	447	452

Source: IEA's PIRLS 2021

Figure 23: Performance trends of girls and boys in England at the 90th percentile across PIRLS cycles

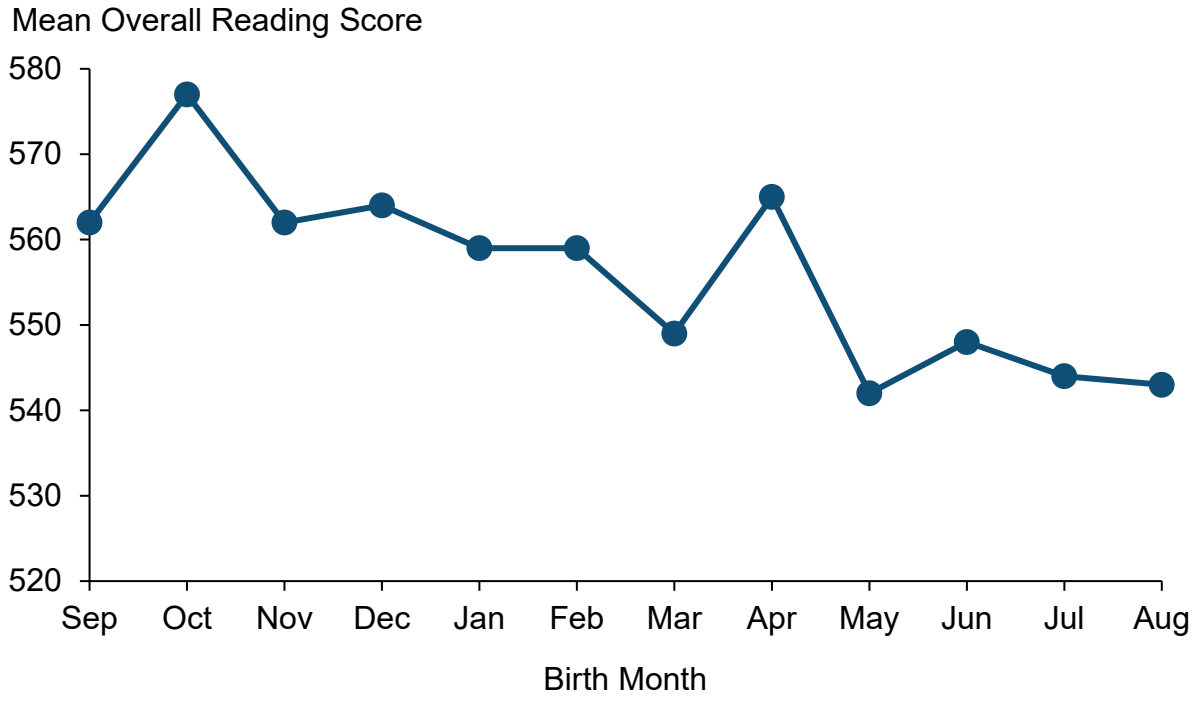
Gender	2001	2006	2011	2016	2021
Girls	665	654	660	660	655
Boys	648	635	641	649	645

Source: IEA's PIRLS 2021

6.3 Performance by pupil age

Figure 24 shows the average PIRLS 2021 performance of pupils in England by their month of birth, sorted in order of the school calendar year in England. The mean overall PIRLS 2021 score by birth month is listed below the figure. In PIRLS 2016, pupils in England born near the end of the calendar year scored approximately 35 points lower than pupils born near the beginning of the school year (McGrane et al., 2017). Figure 1 shows that, although not entirely consistent month-to-month, pupils born near the beginning of the school year tended to score higher than those born near the end of the year, with pupils born in the first quarter of the academic year (September, October and November) scoring around 20 points higher than those born in the fourth quarter (June, July, and August).

Figure 24: Average PIRLS 2021 scores of pupils in England by their month of birth



Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Mean overall PIRLS 2021 score by birth month was:

- September - 562
- October – 577
- November – 562
- December – 564
- January – 559
- February – 559
- March – 549
- April – 565
- May – 542
- June – 548
- July – 544
- August - 543

6.4 Performance by ethnic group and English as an Additional Language (EAL)

6.4.1 Performance by ethnic group

The differences in PIRLS performance between pupils of different ethnic groups were mostly small, as shown in **Table 20**

Table 20. Pupils in the 'Mixed' ethnic group scored highest on average, 17 points higher than pupils from the 'White' or 'Black' ethnic groups who scored lowest on average in PIRLS 2021.

Table 20: Performance of England's PIRLS 2021 cohort by ethnic group

Pupil ethnic group	Percentage of pupils	Average PIRLS score
White	75.2%	554
Black	4.9%	554
Asian	12.2%	559
Mixed	5.9%	571
Other	1.9%	563

Some results may appear inconsistent due to rounding.
Pupil ethnic group is based on major ethnic group recorded in the NPD Pupils listed as being in the 'Chinese' major ethnic group have been combined with those listed as 'Asian' for consistency with how these are reported nationally.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

6.4.2 Performance by English as an Additional Language (EAL) status

The regression analysis earlier in this chapter showed that EAL status was not one of the significant predictors of pupils' overall reading performance in PIRLS 2021. However, even before accounting for the contribution of other pupil characteristics, there was little difference between the PIRLS 2021 performance of pupils with and without EAL. Results comparing these groups are shown in **Table 21.**

Table 21: Performance of England's PIRLS 2021 cohort by English as an Additional Language (EAL) status in the past 6 years

Has EAL	Percent of pupils	Average PIRLS score
No	80.0%	554
Yes	20.0%	557

Some results may appear inconsistent due to rounding.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

6.5 Performance by socioeconomic background

6.5.1 Performance by free school meal (FSM) eligibility

Table 22 shows that pupils who were eligible for FSM within the last 6 years scored 39 points lower in PIRLS 2021, on average, than those who were not eligible for FSM over this period.

Table 22: Performance of England's PIRLS 2021 cohort by their eligibility for free school meals (FSM) in the past 6 years

FSM eligible within the last 6 years	Percent of pupils	Average PIRLS score
No	73.6%	567
Yes	26.4%	527

Some results may appear inconsistent due to rounding.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

6.5.2 Associations between PIRLS performance and the number of books at home

Table 23 shows the percentages of pupils who reported having different numbers of books at home, as well as the corresponding average scores in PIRLS 2021. In general, higher numbers of books at home tended to be associated with higher performance in PIRLS 2021. Pupils with over 200 books at home scored about 85 points higher than those who had none or very few. The points difference between pupils with no books or very few and those with 11 to 25 books is the largest (35 points), with smaller points differences between each pair of categories as the number of books increases.

Table 23: Average PIRLS 2021 score of pupils in England and comparator systems by the number of books they reported having at home

Books at home	Percent of pupils	Average PIRLS score
None or very few (0-10)	12.4%	507
Enough to fill one shelf (11-25)	24.4%	542
Enough to fill one bookcase (26-100)	32.9%	565
Enough to fill two bookcases (101-200)	17.4%	579
Enough to fill three or more bookcases (>200)	12.8%	591

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

6.6 Contextualisation: Changes in the magnitude of the gender gap over time

Across all participating education systems, girls consistently outperformed boys in PIRLS 2021, a trend also seen in previous cycles. Results from other international large-scale assessments such as PISA, and national large-scale assessments such as the National Assessment of Educational Progress (NAEP) in the United States, as well as meta-analyses of gender gaps for different educational outcomes also reflect higher achievement for girls than boys in the area of reading (Borgonovi et al., 2018; Kaplan & Jude, 2022; Reilly et al., 2019; Schleicher, 2019). When considering the gender gap in PIRLS performance over time, fluctuations and changes are noticeable, and in some education systems the gap between performance narrows. **Box 6.1** discusses education systems where the gender gap in PIRLS has narrowed between 2016 and 2021.

Box 6.1 Changes in gender gaps: boys improving or girls declining?

The gender gap across PIRLS cycles has remained reasonably consistent with girls outperforming boys to some extent across all contexts. However, 15 education systems, including England, show evidence of a gender gap that narrows somewhat over time. In many cases, particularly between 2016 and 2021, this is due to the performance of boys remaining reasonably stable while the performance of girls decreases. This narrowing of the gender gap due to a decrease in the performance of girls has also been seen in other assessments of reading (Borgonovi, 2022; Schleicher, 2019). The declining performance of girls has understandably raised concern for researchers, governments and policymakers across different education systems. The reasons behind the decline are not well understood, and contributing factors are often hard to disentangle.

In PIRLS, there are 4 education systems where the gender gap reduced between 2016 and 2021 due the average scores for boys increasing more than they did for girls, rather than a decline in girls' scores. In Egypt, Oman, Qatar, and Saudi Arabia, although performing below the International Scale Centrepoint for PIRLS (500), overall average performance for all pupils increased significantly between 2016 and 2021. Egypt and Oman participated in the original data collection period while Qatar and Saudi Arabia delayed their participation by six months due to COVID-19. This means that for Qatar and Saudi Arabia, the average age of participating pupils is higher than for education systems which collected data as originally planned. It is important to consider, therefore, that changes in the magnitude of gender gaps are generally seen as age increases. In reading, girls tend to outperform boys in primary school to a greater extent than in secondary school; the gap narrows further in higher education and by adulthood it is negligible (Solheim & Lundetræ, 2018). (Chapter 1 discusses the data collection periods in more detail, however, it is important to remember that generally where data collection was delayed – overall performance in PIRLS was higher than for education systems where data was collected in the original timeframe.)

Continues on next page

Box 6.1 (continued)

Although in all 4 systems there was a significant increase in overall PIRLS average for all pupils, when considering the trends in boys and girls average scores some differences are evident. In most cases, the girls and boys scores increased but the difference between boys scores across cycles was higher than the difference in average scores for girls. In Egypt, the average score for girls increased by 37 points, while the boys average increased by 58 points. In Oman, for girls the change was smaller just 5 points, while for boys a significant increase of 17 points was seen. In Qatar, a significant increase was seen for both girls (33 points) and boys (52 points). While in Saudi Arabia, the average score for girls did not change between 2016 and 2021, but the average score for boys increased by 36 points.

Of the education systems where the gender gap narrowed as a result of boys scores increasing, Oman is the only case where specific initiatives have been implemented that focus on reducing the gender gap. These include professional development initiatives focused on increasing the interest and motivation to read for boys, as well as differentiated teaching strategies to raise the level of reading comprehension for boys (Al Maskari et al., 2022).

Research into the gender gap in educational performance more broadly reveals some insights into changes in trends of performance for boys and girls. There is evidence to suggest that boys perform better than girls on digital format assessments (Borgonovi, 2016; Siddiq & Scherer, 2019). Possible reasons for this point to higher motivation and interest levels for boys when reading and taking assessments on computers (Cai et al., 2017; Borgonovi, 2016). Studies are also emerging looking at the impact of COVID-19 on educational outcomes for boys and girls which look at the transition to online learning, differences in school attendance across genders, and differences in home-care responsibilities (Blackman, 2022; Damani, 2022; De Paz Nieves, 2021). Considering that in a number of education systems, including England, there is evidence of a slightly declining performance of girls, understanding the potential causes of gender gap trajectories is important for ensuring constructive progress can be made.

7 Reading performance by pupils' motivations

Chapter overview

This chapter explores the pupils' attitudes towards reading, and how these attitudes relate to performance in PIRLS. This includes looking at pupils' confidence in reading, liking of reading, and engagement in reading lessons, and exploring how these differ with respect to pupil characteristics (gender, FSM eligibility within the past 6 years, and EAL status) and circumstances (e.g., access to books at home). The chapter also explores trends from 2011 and 2016 in responses to questionnaire items that we are able to compare over time, and concludes with an exploration of how much time girls and boys in England report that they spend reading outside of school.

Key findings

- Confidence in reading is strongly correlated with performance in PIRLS in England, though this is not the same across all education systems. In England, there is approximately a 90-point difference in overall reading performance between the most- and least-confident readers.
- Having more books at home was associated with higher levels of confidence in reading. Pupils who had been eligible for FSM in the past 6 years were less likely to be very confident. Within ethnic groups, higher confidence tended to be associated with higher reading performance where counts were high enough to provide reliable estimates. Pupils with and without EAL did not differ greatly in their confidence in reading, on average, nor in the association between confidence and PIRLS performance.
- Approximately a quarter of pupils in England 'do not like' reading. In England and in every other participating educational system, a higher proportion of boys reported not liking reading than girls. Pupils who like reading 'very much' scored higher on average than pupils who do not like reading.
- Fewer pupils in England reported that they enjoy reading than in the 2011 or 2016 cycles of PIRLS.
- Pupils in England spent slightly less time reading outside of school each day than pupils in most other education systems, and less time reading outside of school than reported in PIRLS 2011 and PIRLS 2016. Girls' time spent reading outside of schools decreased more than boys' in England, but a slightly higher proportion of girls than boys in England report reading for an hour or more each day outside of school.

7.1 Scales for pupils' motivations towards reading

After pupils completed their 2 test-booklets, they completed one additional questionnaire booklet asking them for information about their home environments, their activities at home (both directly and indirectly related to reading), their opinions about reading, and their own perspectives on their reading abilities. In this chapter, we focus on the results from this questionnaire concerning pupils' motivations, beliefs, and behaviours towards reading.

For many of the questionnaire items, pupils were given a statement relating to their attitudes towards reading. Examples of these statements include, "I would like to have more time for reading", and "I have trouble reading stories with difficult words". Pupils were asked to tick a box indicating how much they agreed with that statement on a four-point scale ("agree a lot", "agree a little", "disagree a little" and "disagree a lot").

Questionnaire items relating to similar aspects of pupils' motivations and attitudes towards reading were then combined into different scales, including a "Confident in Reading" Scale, a "Likes Reading" Scale, and an "Engaged in Reading Lessons" Scale. Each pupil's responses to the relevant items in each scale were combined using psychometric techniques to produce a scale score. These scale scores were then used to classify each pupil into one of 3 categories, such as 'very confident', 'somewhat confident', or 'not confident'.

7.2 Pupils' confidence in reading

The '**Confident in Reading'** Scale is based on pupils' responses to 6 items in the Pupil Questionnaire. Pupils were asked the following:

> "How well do you read? Tell how much you agree with each of these statements."
>
> - I usually do well in reading.
> - Reading is easy for me.
> - I have trouble reading stories with difficult words.
> - Reading is harder for me than for many of my classmates.
> - Reading is harder for me than any other subject.
> - I am just not good at reading.

Table 24 shows the proportions of pupils in England and comparator education systems that were classified as 'very confident', 'somewhat confident' and 'not confident' readers. The table also shows the difference in the average PIRLS scores between the 'very confident' and 'not confident' readers in each educational system.

Table 24: Pupils' confidence in reading in England and comparator systems in PIRLS 2021

Education system	Very confident	Somewhat confident	Not confident	Points Difference
England	45%	34%	21%	90
Singapore	51%	33%	16%	107
Hong Kong	32%	39%	29%	66
Australia	43%	38%	19%	104

**Some results may appear inconsistent due to rounding.*
*** Points difference calculated as (average score of 'very confident' readers) – (average score of 'not confident' readers).*

Source: IEA's PIRLS 2021

Around 45% of pupils in England were classified as being 'very confident' readers. This was similar to the percentage in Australia. It was also quite similar to the corresponding percentages in other high-performing English-speaking education systems including those with delayed assessment such as Ireland, Northern Ireland, and the United States.

By contrast, despite high levels of overall performance in Hong Kong, a considerably lower proportion of pupils reported high confidence in reading, and a greater proportion were classified as 'not confident' readers. This was a trend common to other Chinese-speaking education systems including Macao and Taiwan. Of the comparators, Singapore had the largest proportion of pupils who were classified as 'very confident' readers. Reading confidence was generally high among pupils in among Eastern-European education systems, with the greatest proportions of very confident readers in Bulgaria (61%), Kosovo (59%) and Serbia (58%).

7.2.1 Gender differences in confidence in reading

Table 25 breaks down pupils' confidence in reading by their gender. Girls and boys in England reported similar levels of confidence in reading, and the difference in PIRLS scores between the most and least confident pupils were similarly sized for girls and boys, both over 80 points. Internationally, almost every education system participating in PIRLS 2021 had higher proportions of girls categorised as being 'very confident' readers than boys. The International Median difference in the proportions of girls and boys being classified as 'very confident' readers was 4 percentage points, compared to 2 percentage points in England.

Table 25: Pupils' confidence in reading and their performance in PIRLS 2021 in England by gender

Confidence	Proportion of girls	Average score - girls	Proportion of boys	Average score - boys
Very confident	46%	598	44%	589
Somewhat confident	34%	546	34%	543
Not confident	20%	513	22%	496

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.2.2 Confidence in reading and access to books at home

Table 26 shows how pupils' confidence on the 'Confident in Reading' Scale in England is related to the number of books they reported having in their homes. As reported in section **6.5.2**, pupils in England who reported having more books at home had considerably higher scores in PIRLS than those reporting that their homes had fewer books. This is also reflected in their confidence in reading. Around two-thirds of the pupils who reported having more than 200 books at home were classified as 'very confident' readers, compared to just a quarter of pupils who reported having 10 or fewer books at home.

Table 26: Pupils' confidence in reading and their performance in PIRLS 2021 in England by the number of books at home

Number of books at home	Very confident	Average score - very confident	Not confident	Average score – not confident
0-10 books	25%	557	37%	477
11-25 books	35%	573	27%	505
26-100 books	46%	595	17%	517
101-200 books	57%	603	15%	525
More than 200 books	66%	617	13%	508

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.2.3 Confidence in reading, FSM eligibility, ethnic group and EAL status

This section describes confidence in reading and motivations to read by pupil characteristics such as eligibility for FSM at school, ethnic group, and EAL status. For further information on these pupil background characteristic variables, please refer to the

relevant sections in Chapter **6**. For information on the number of pupils in each category for each of these pupil characteristics, please refer to **Table 2** in section **1.2.3**. The information reported in this section about pupil background characteristics uses data from England's NPD, which has been matched with the PIRLS 2021 data for England. As such, this section does not include information on comparator education systems.

Table 27 reports pupils' confidence in reading and their performance in PIRLS 2021 by their eligibility for FSM within the last 6 years. There is a positive relationship between confidence in reading and reading performance regardless of FSM eligibility. In other words, across both pupils who were and those who were not eligible for FSM in the last 6 years, pupils who are more confident in reading also tend to achieve higher scores in reading performance on average. The average performance of pupils eligible for FSM in the last 6 years who are 'very confident' in reading is slightly higher than 'very confident' pupils who were not FSM-eligible at any point during that period (568 compared to 560). For pupils who were eligible for FSM, however, the range of performance across levels of confidence in reading is wider. Pupils who were FSM-eligible within the last 6 years and who are 'very confident' achieve, on average, 82 points higher than their counterparts who were FSM-eligible but 'not very confident'. For pupils who were not FSM eligible, the range is just 49 points between those who are 'very confident' compared to 'not very confident'. There is a lower percentage of very confident readers in the FSM-eligible group (36%) than in the FSM-ineligible group (48%). This means that pupils who have been eligible for FSM are less likely to be 'very confident' in reading than those who have not been eligible for FSM.

Table 27: Pupils' confidence in reading and their performance in PIRLS 2021 by eligibility for free school meals (FSM) in the past 6 years

Confidence in reading	Percent of pupils eligible for FSM in the past 6 years	Average PIRLS score for FSM-eligible pupils	Percent of pupils not eligible for FSM in the past 6 years	Average PIRLS score for FSM-eligible pupils
Very confident	36%	568	48%	560
Somewhat confident	35%	519	34%	553
Not very confident	29%	486	18%	511

Some results may appear inconsistent due to rounding.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 28 shows pupils' confidence in reading and their range of performance in PIRLS 2021 by ethnic group. Across all major ethnic groups, the majority of pupils responded that they are either 'somewhat confident' or 'very confident' in reading, with between 13% and 21% of pupils expressing that they do not feel very confident in reading. Pupils from the 'Mixed' and 'Black' ethnic groups have the highest percentages of 'very confident'

readers, 55% and 54% respectively. Pupils from the 'White' ethnic group have the highest proportion of 'not very confident' readers (21%), while pupils from the 'Asian' group have the lowest percentage of 'not very confident' readers (13%). Due to low sample sizes (less than 50) in some ethnic group by confidence level combinations, the relationship between ethnic group, confidence in reading and PIRLS 2021 performance could not be reliably calculated for every group. For pupils from the 'White' and 'Asian' groups, where sample size was sufficient to establish the difference in PIRLS 2021 scores across confidence levels, it is evident that higher confidence levels are associated with higher achievement. For pupils from the 'White' group, 'very confident' readers score 92 points higher on average than their 'not very confident' peers. Meanwhile, pupils from the 'Asian' group who are 'very confident' in reading score 100 points higher on average than their 'not very confident' peers.

Table 28: Pupils' confidence in reading and their performance in PIRLS 2021 by ethnic group

Pupil ethnic group	Very confident	Somewhat confident	Not very confident	Points difference
White	43%	34%	21%	92
Black	54%	32%	14%	n/a
Asian	49%	38%	13%	100
Mixed	55%	29%	16%	n/a
Other	39%	42%	19%	n/a

Some results may appear inconsistent due to rounding.
Points difference calculated as average score of 'very confident' readers minus average score of 'not very confident' readers. 'n/a' denotes a result not reported for ethnic groups where the estimate of points difference would be based on fewer than 50 pupils.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 29 shows the levels of confidence and average performance in PIRLS 2021 according to pupils' EAL status. The percent of pupils with different levels of confidence in reading is similar across both pupils with EAL and without. In both groups, 45% of pupils are 'very confident' in reading and, as was seen previously for other characteristics, confident readers tended to score higher than those who were 'not very confident'. For pupils both with and without EAL, the average achievement of 'not very confident' readers is just over 90 points lower than that of 'very confident' readers.

Table 29: Pupils' confidence in reading and their performance in PIRLS 2021 by English as an Additional Language (EAL) status

Confidence in reading	Percent of pupils with EAL	Average PIRLS score for pupils with EAL	Percent of pupils without EAL	Average PIRLS score for pupils without EAL
Very confident	45%	594	45%	593
Somewhat confident	38%	534	33%	546
Not very confident	16%	500	22%	502

Some results may appear inconsistent due to rounding.

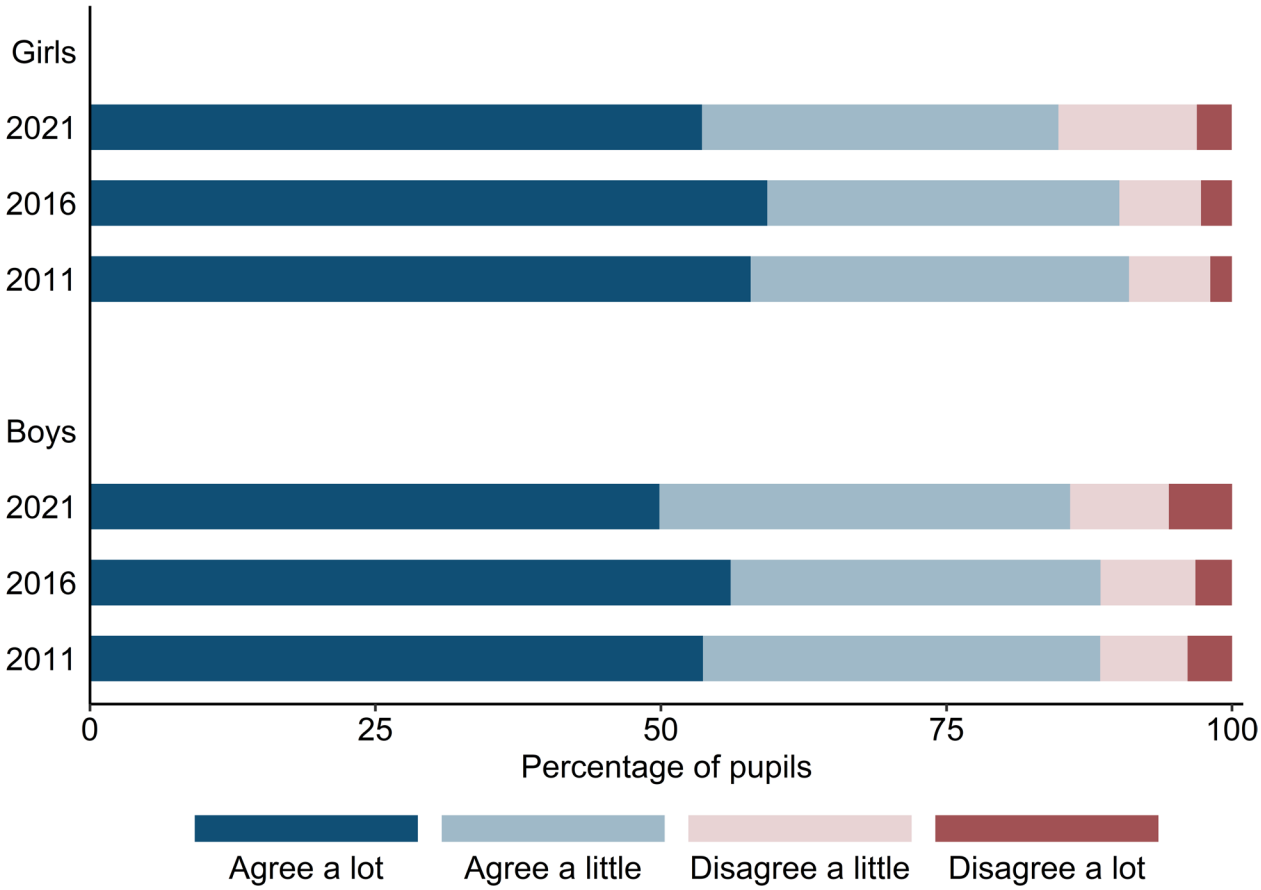
Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

7.2.4 Trends in confidence in reading

The 'Confidence in Reading' scale has changed slightly across PIRLS cycles, both in terms of the specific statements pupils are asked to respond to and in terms of how each response contributes to the overall classification of reading confidence. However, some statements have been used in multiple cycles, and it is possible to look at trends in responses to these.

Figure 25 shows how girls and boys in England responded to the 'Reading is easy for me' statement in the 2011, 2016 and 2021 cycles of PIRLS. For both girls and boys, a lower percentage of pupils in PIRLS 2021 strongly agreed that 'reading is easy' for them than in the previous 2 cycles. Also for both girls and boys, the combined percentage of pupils disagreeing (a little or a lot) that reading was easy for them increased to 15%. However, a greater proportion (6%) of boys disagreed 'a lot' that 'reading is easy' in PIRLS 2021, up from 3% in PIRLS 2016.

Figure 25: Percentages of girls and boys in England providing responses to the statement 'Reading is easy for me' across the last 3 PIRLS cycles



Gender and Cycle	Agree a lot	Agree a little	Disagree a little	Disagree a lot
Girls - 2021	54%	31%	12%	3%
Girls - 2016	59%	31%	7%	3%
Girls - 2011	58%	33%	7%	2%
Boys - 2021	50%	36%	9%	6%
Boys - 2016	56%	32%	8%	3%
Boys – 2011	54%	35%	8%	4%

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.3 Pupils' liking of reading

The '**Likes Reading**' Scale is based on pupils' responses to 8 statements in the Pupil Questionnaire. Pupils were asked the following:

"What do you think of reading? Tell how much you agree with each of these statements."

- I like talking about what I read with other people
- I would be happy if someone gave me a book as a present
- I think reading is boring
- I would like to have more time for reading
- I enjoy reading
- I learn a lot from reading
- I like to read things that make me think
- I like it when a book helps me imagine other worlds

Table 30 shows the proportions of pupils in England and each of the comparator education systems who 'very much like reading', 'somewhat like reading' or 'do not like reading'. The table also shows the difference in average PIRLS scores between pupils who 'very much like reading' and 'do not like reading' in each education system.

Table 30: Pupils' liking of reading in England and comparator systems in PIRLS 2021

Education system	Very much likes reading	Somewhat likes reading	Does not like reading	Points Difference
England	29%	48%	24%	34
Singapore	33%	47%	20%	47
Hong Kong	30%	47%	23%	40
Australia	29%	45%	26%	45

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

Between comparators, there were not substantial differences in the proportions of pupils that were classified as 'very much' liking reading, with roughly one third of pupils in each of these education systems reporting the highest levels of enjoyment. Looking beyond the education systems to which direct statistical comparisons were possible, low levels of reading enjoyment were common in higher-performing education systems and culturally-similar English-speaking education systems more broadly. Ireland, Northern Ireland and the United States were all very similar to England and Australia in their proportions of pupils who very much, somewhat, and do not like reading, as well as in their relationships between liking of reading and PIRLS performance overall. Scandinavian education systems had some of the lowest proportions of pupils classified as 'very much' liking reading across all of the participating education systems, with Norway (13%) having the lowest proportion, followed by Denmark (14%). Sweden (18%) and Finland (23%) also had lower than average proportions of pupils who 'very much like' reading than England. By contrast, more than 80% of pupils in Kosovo and Uzbekistan were classified as 'very much' liking reading. The corresponding International Median was 46%, with almost all of

the education systems above this threshold having overall PIRLS scores below the International Median score of 520.

Although the trend *across* systems was that education systems with higher overall performance had lower proportions of pupils that reported 'very much' liking reading, *within* the vast majority of those education systems, pupils that enjoy reading more also scored higher in PIRLS 2021. In England, there was a 34 point average difference between pupils that 'very much' like reading and those that 'do not' like reading, a slightly smaller difference than in comparator education systems.

7.3.1 Gender differences in liking of reading

Table 31 breaks down pupils' liking of reading by their gender. In England, 32% of girls and 25% of boys were classified as 'very much' liking reading. Conversely, 19% of girls and 28% of boys were classified as pupils that 'do not' like reading. In every participating education system in PIRLS 2021, a higher proportion of girls reported the highest levels of reading enjoyment than boys. In England, 32% of girls and 25% of boys (a difference of 7 percentage points) 'very much liked' reading, a difference that was roughly in line with the International Median. There was a similar relationship between liking of reading and PIRLS performance between girls and boys; girls that do not like reading scored an average of 36 points lower than girls that very much like reading, while this difference was 30 points for boys.

Table 31: Pupils' liking of reading and their performance in PIRLS 2021 in England by gender

Liking of reading	Proportion of girls	Average score - girls	Proportion of boys	Average score - boys
Very much like reading	32%	574	25%	566
Somewhat like reading	48%	567	47%	556
Do not like reading	19%	538	28%	535

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.3.2 Liking of reading by access to books at home

Table 32 shows how pupils' enjoyment of reading in England is related to the number of books they reported to have in their homes. Perhaps unsurprisingly, pupils in England who reported liking reading the most also tended to report having more books at home. The relationship between the number of books at home, liking of reading, and PIRLS performance was more complex. Having more books at home was positively associated with PIRLS performance, as was liking of reading. Specifically for pupils with 10 or fewer books at home, however, pupils that reported not liking reading outperformed those that

very much like reading (those who somewhat like reading also outperformed those who very much like reading, but scored lower than those who 'did not like' reading). This seemingly counterintuitive finding should be interpreted with caution due to relatively low numbers of pupils responding this way. For pupils reporting 11 or more books at home, those who very much like reading outperform those that do not like reading, with the gap in average scores increasing as the number of books at home increases.

Table 32: Pupils' liking of reading and their performance in PIRLS 2021 in England by the number of books at home

Number of books at home	Very much likes reading	Average score - very much likes	Does not like reading	Average score – does not like
0-10 books	16%	479	46%	514
11-25 books	21%	542	29%	534
26-100 books	28%	571	21%	549
101-200 books	35%	589	15%	550
More than 200 books	51%	602	11%	552

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.3.3 Liking of reading by FSM eligibility, ethnic group and EAL status

Table 33 presents pupils' liking of reading and their PIRLS 2021 average scores by their FSM eligibility within the past 6 years. In the group of pupils who were FSM-eligible within that period, 31% reported that they 'do not like reading'. This is slightly higher than the percent of pupils who 'do not like reading' amongst those who were not FSM-eligible within the past 6 years (22%). In both groups, approximately one-third of pupils said that they 'very much like reading', which suggests that FSM-eligibility does not have a substantial influence on the proportion of pupils who 'very much like reading'. However, across all levels of reading enjoyment, the average PIRLS 2021 scores for pupils who were not FSM-eligible within the past 6 years is higher. Additionally, the range of average scores is narrower across levels of reading enjoyment for pupils who have been FSM eligible (13 points) than for those who have not been eligible (36 points).

Table 33: Pupils' liking of reading and their performance in PIRLS 2021 by eligibility for free school meals (FSM) in the past 6 years

Liking of reading	Percent of pupils eligible for FSM in the past 6 years	Average PIRLS score for FSM-eligible pupils	Percent of pupils not eligible for FSM in the past 6 years	Average PIRLS score for pupils not eligible for FSM
Very much likes	27%	533	29%	580
Somewhat likes	42%	530	50%	569
Does not like	31%	520	22%	544

Some results may appear inconsistent due to rounding.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 34 presents the different levels of reading enjoyment for pupils from each ethnic group. Also reported in the table is the difference in average performance in PIRLS 2021 for pupils who 'very much like reading' and those who 'do not like reading' for each ethnic group. The proportions of pupils in the 'Asian' group who 'very much like reading' is the highest (36%) in any ethnic group. Due to low counts (fewer than 50) in some ethnic group by liking of reading combinations, the relationship between ethnic group, liking of reading and PIRLS 2021 performance is not reported. For the 3 groups that could be reliably calculated based on large enough numbers of pupils, pupils who 'very much like reading' have higher average reading achievement than those who do not like reading.

Table 34: Pupils' liking of reading and their performance in PIRLS 2021 by ethnic group

Pupil ethnic group	Very much likes reading	Somewhat likes reading	Does not like reading	Points difference
White	27%	48%	25%	35
Black	29%	51%	19%	n/a
Asian	36%	48%	16%	18
Mixed	28%	44%	28%	39
Other	19%	47%	33%	n/a

Some results may appear inconsistent due to rounding.
Points difference calculated as average score of 'very much likes' readers minus average score of 'does not like' readers. 'n/a' denotes a result not reported for ethnic groups where the estimate of points difference would be based on fewer than 50 pupils.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 35 shows pupils' liking of reading and their average performance in PIRLS 2021 by their EAL status. Proportions of pupils who 'very much like reading' are similar across

those with and without EAL, 30% and 28% respectively. As was seen for other characteristics above, and generally in PIRLS 2021, pupils who like reading to some extent score higher, on average, than those who do not like reading. In considering PIRLS performance of pupils who 'very much like reading' across pupils with and without EAL, the pupils with EAL score 15 points lower on average than their counterparts without EAL. For pupils who 'somewhat like reading' as well as pupils who 'do not like reading', the differences in average PIRLS scores between the groups with and without EAL are small.

Table 35: Pupils' liking of reading and their performance in PIRLS 2021 by English as an Additional Language (EAL) status

Liking of reading	Percent of pupils with EAL	Average PIRLS score for pupils with EAL	Percent of pupils without EAL	Average PIRLS score for pupils without EAL
Very much likes	30%	557	28%	572
Somewhat likes	49%	559	47%	561
Does not like	20%	540	25%	535

Some results may appear inconsistent due to rounding.

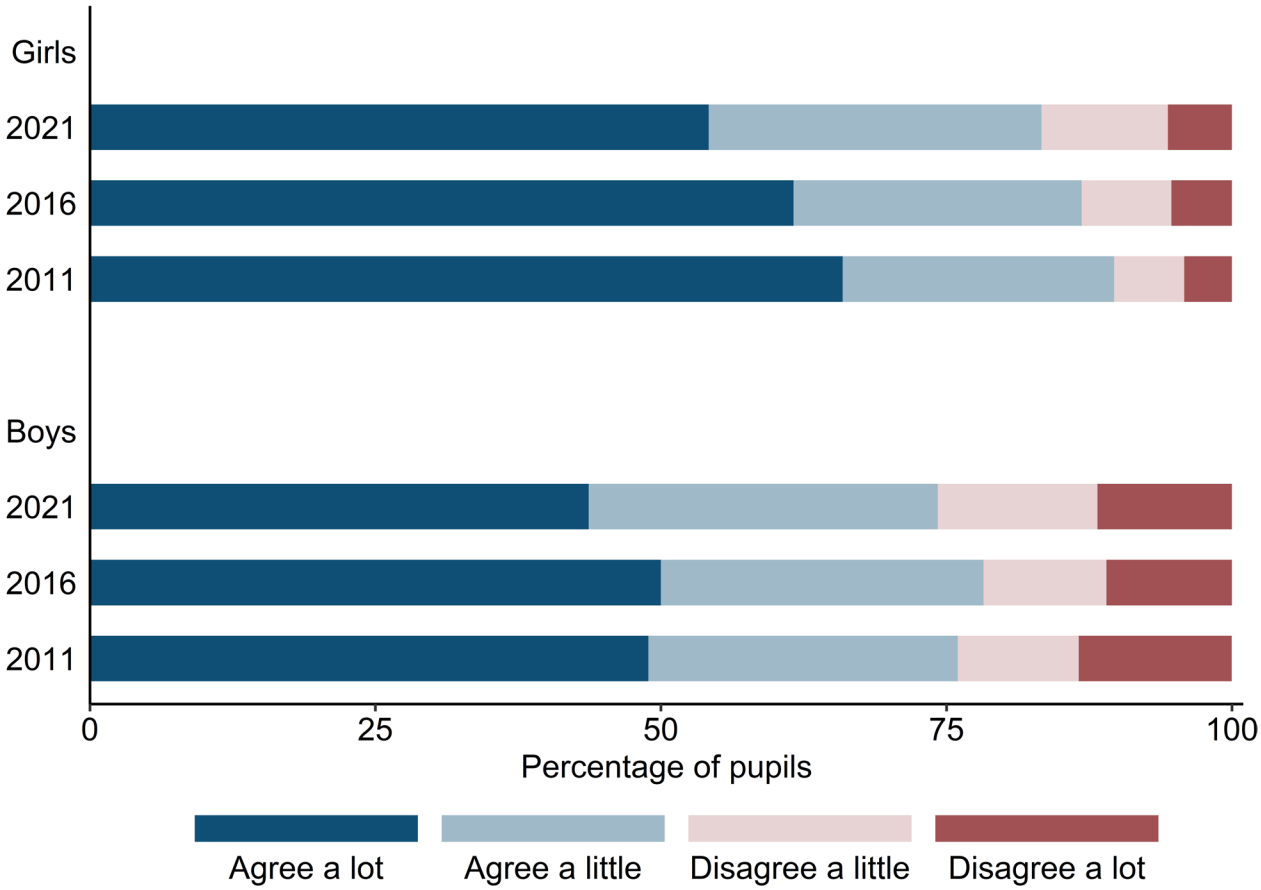
Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

7.3.4 Trends in liking of reading

Similar to the 'Confidence in Reading' Scale, changes in questionnaire items and scaling procedures mean that assessing trends on the 'Liking of Reading' Scale overall is not possible, but we can look at responses to individual statements contributing to the 'Liking of Reading' Scale where these have remained the same across several cycles.

Figure 26 shows how girls and boys in England responded to the statement, 'I enjoy reading' in the 2021, 2016, and 2011 cycles of PIRLS. Across all 3 of these cycles, smaller proportions of boys have agreed that they enjoy reading than girls, and around twice the proportion of boys has strongly disagreed. The proportions of both boys and girls who disagreed (a little or a lot) with the statement has increased since 2016 and 2011.

Figure 26: Percentages of girls and boys in England providing responses to the statement 'I enjoy reading' across the last 3 PIRLS cycles



Gender and Cycle	Agree a lot	Agree a little	Disagree a little	Disagree a lot
Girls - 2021	54%	29%	11%	6%
Girls - 2016	62%	25%	8%	5%
Girls - 2011	66%	24%	6%	4%
Boys - 2021	44%	31%	14%	12%
Boys - 2016	50%	28%	11%	11%
Boys – 2011	49%	27%	11%	13%

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.4 Pupils' engagement in reading lessons

The '**Engaged in Reading Lessons**' Scale is based on of pupils' responses to 9 state-ments in the Pupil Questionnaire. Pupils were asked the following:

"How much do you agree with these statements about your reading lessons?"

- I like what I read about in school
- My teacher gives me interesting things to read
- I know what my teacher expects me to do
- My teacher is easy to understand
- I am interested in what my teacher says
- My teacher encourages me to say what I think about what I have read
- My teacher lets me show what I have learned
- My teacher does a variety of things to help us learn
- My teacher tells me how to do better when I make a mistake

Table 36 shows the proportions of pupils in England and each of the comparator education systems classified 'very engaged, 'somewhat engaged' or 'less than engaged' in their reading lessons. The table also shows the difference in average PIRLS scores between 'very engaged' pupils and 'less than engaged' pupils in each education system.

Table 36: Pupils' engagement in reading lessons in England and comparator systems relative to their performance in PIRLS 2021

Education system	Very engaged	Somewhat engaged	Less than engaged	Points Difference
England	54%	41%	5%	35
Singapore	48%	45%	7%	36
Hong Kong	39%	50%	11%	30
Australia	52%	42%	7%	35

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

In England, 54% of pupils were classified as being 'very engaged' in reading. This was higher than the other comparator systems, particularly compared to Hong Kong. Additionally, fewer pupils in England were classified as being 'less than engaged' in their reading lessons than the other comparators. However, England's figure of 54% was slightly below the International Median of 57%.

Looking beyond the selected comparator education systems, the 6 education systems with the highest levels of reading lesson engagement were all Eastern European, with 94% of pupils in Albania classified as 'very engaged' in their reading lessons. By contrast, Hong Kong's figure of 39% was only greater than Denmark's (38%). Hong Kong also had the highest proportion of pupils who were classified as 'less than engaged' in their reading across all participating education systems in PIRLS 2021.

Higher engagement in reading lessons was associated with stronger overall reading performance in most education systems, including England. The difference in points in England between the most and least engaged pupils was roughly in line with the international average.

7.4.1 Gender differences in engagement in reading lessons

Table 37 breaks down pupils' engagement in reading lessons by gender. A slightly higher proportion of girls in England were classified as being 'very engaged' in their reading lessons than boys, and a slightly larger proportion of boys were classified as 'less than engaged'. The gender gap in PIRLS performance was relatively stable across pupils with differing levels of reading lesson engagement, and the gap (of about 34 points) between pupils who were 'very engaged' and those who were 'less than engaged' was consistent across boys and girls.

Table 37: Pupils' engagement in reading lessons and their performance in PIRLS 2021 in England by gender

Engagement in reading lessons	Proportion of girls	Average score - girls	Proportion of boys	Average score - boys
Very engaged	56%	567	52%	558
Somewhat engaged	40%	561	42%	551
Less than engaged	4%	533	6%	524

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.4.2 Engagement in reading lessons by access to books at home

Table 38 shows the relationship between the number of books pupils reported having at home and their engagement in reading lessons. In general, higher levels of engagement were associated with higher average scores for overall reading performance, but the group reporting 0 to 10 books at home deviated from this pattern slightly. Although 'less than engaged' pupils had lower scores on average than their 'very engaged' counterparts with few or no books at home, their peers who were 'somewhat engaged' were actually the highest-scoring on average. It is difficult to know exactly why this might have been the case.

Table 38: Pupils' engagement in reading lessons and their performance in PIRLS 2021 in England by number of books at home

Number of books at home	Very engaged	Average score - very engaged	Less than engaged	Average score – less than engaged
0-10 books	48%	504	7%	472
11-25 books	50%	545	5%	527
26-100 books	54%	569	5%	532
101-200 books	59%	584	4%	552
More than 200 books	58%	594	5%	574

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.4.3 Engagement in reading lessons by FSM eligibility, ethnic group and EAL status

Table 39 presents the range of pupils' engagement in reading lessons according to their eligibility for FSM within the last 6 years, as well as the average PIRLS 2021 score associated with each category. Across both groups, the vast majority of pupils are engaged in reading lessons to some extent. Furthermore, the proportions of pupils with different levels of engagement are very similar for both groups. However, pupils who had been FSM eligible scored lower on average than those who had not been FSM eligible across all levels of engagement. Pupils who are 'very engaged' in reading lessons and have been FSM eligible have an average score of 532 in PIRLS 2021, while their peers who have not been FSM eligible have an average score of 571. The differences in PIRLS achievement across the levels of engagement is wider for pupils who are FSM eligible (51 points) than for those who are not FSM-eligible (31 points).

Table 39: Pupils' engagement in reading lessons and their performance in PIRLS 2021 by eligibility for free school meals (FSM) in the past 6 years

Engagement in reading lessons	Percent of pupils eligible for FSM in the past 6 years	Average PIRLS score for FSM-eligible pupils	Percent of pupils not eligible for FSM in the past 6 years	Average PIRLS score for pupils not eligible for FSM
Very engaged	50%	532	54%	571
Somewhat engaged	44%	530	42%	565
Less than engaged	6%	481	5%	540

Some results may appear inconsistent due to rounding.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 40 presents the levels of pupil engagement in reading lessons according to ethnic group. As is apparent in the table, the proportions of pupils at each of the 3 levels of engagement are similar across all ethnic groups. This means that there is no strong association between pupils' engagement in reading lessons and their ethnic groups. Due to small sample sizes (fewer than 50) in most groups, the points difference between the PIRLS scores of pupils who were 'very engaged' and 'less than engaged' could only be calculated for pupils in the 'White' ethnic group. Within the 'White' group, 'very engaged pupils scored about 47 points higher than 'less than engaged' pupils.

Table 40: Pupils' engagement in reading lessons and their performance in PIRLS 2021 by ethnic group

Pupil ethnic group	Very engaged	Somewhat engaged	Less than engaged	Points difference
White	53%	42%	5%	47
Black	51%	41%	8%	n/a
Asian	56%	39%	5%	n/a
Mixed	49%	45%	6%	n/a
Other	37%	53%	9%	n/a

Some results may appear inconsistent due to rounding.
Points difference calculated as average score of 'very engaged' pupils minus average score of 'less than engaged' pupils. 'n/a' denotes a result not reported for ethnic groups where the estimate of points difference would be based on fewer than 50 pupils.

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Table 41 presents pupils' engagement in their reading lessons and their average PIRLS 2021 scores by EAL status. The proportion of pupils reporting each level of engagement in reading lessons is very similar across pupils with and without EAL. In both groups, only 5% of pupils are 'less than engaged' in reading lessons, indicating that engagement is generally fairly high for the vast majority of pupils. There was not a consistent relationship between average PIRLS score and engagement across pupils with and without EAL. Amongst the pupils without EAL, pupils with higher engagement tended to have higher performance in PIRLS on average, but this pattern was not evident for pupils with EAL.

Table 41: Pupils' engagement in reading lessons and their performance in PIRLS 2021 by English as an Additional Language (EAL) status

Engagement in reading lessons	Percent of pupils with EAL	Average PIRLS score for pupils with EAL	Percent of pupils without EAL	Average PIRLS score for pupils without EAL
Very engaged	53%	555	52%	563
Somewhat engaged	42%	557	42%	555
Less than engaged	5%	n/a	5%	519

Some results may appear inconsistent due to rounding.

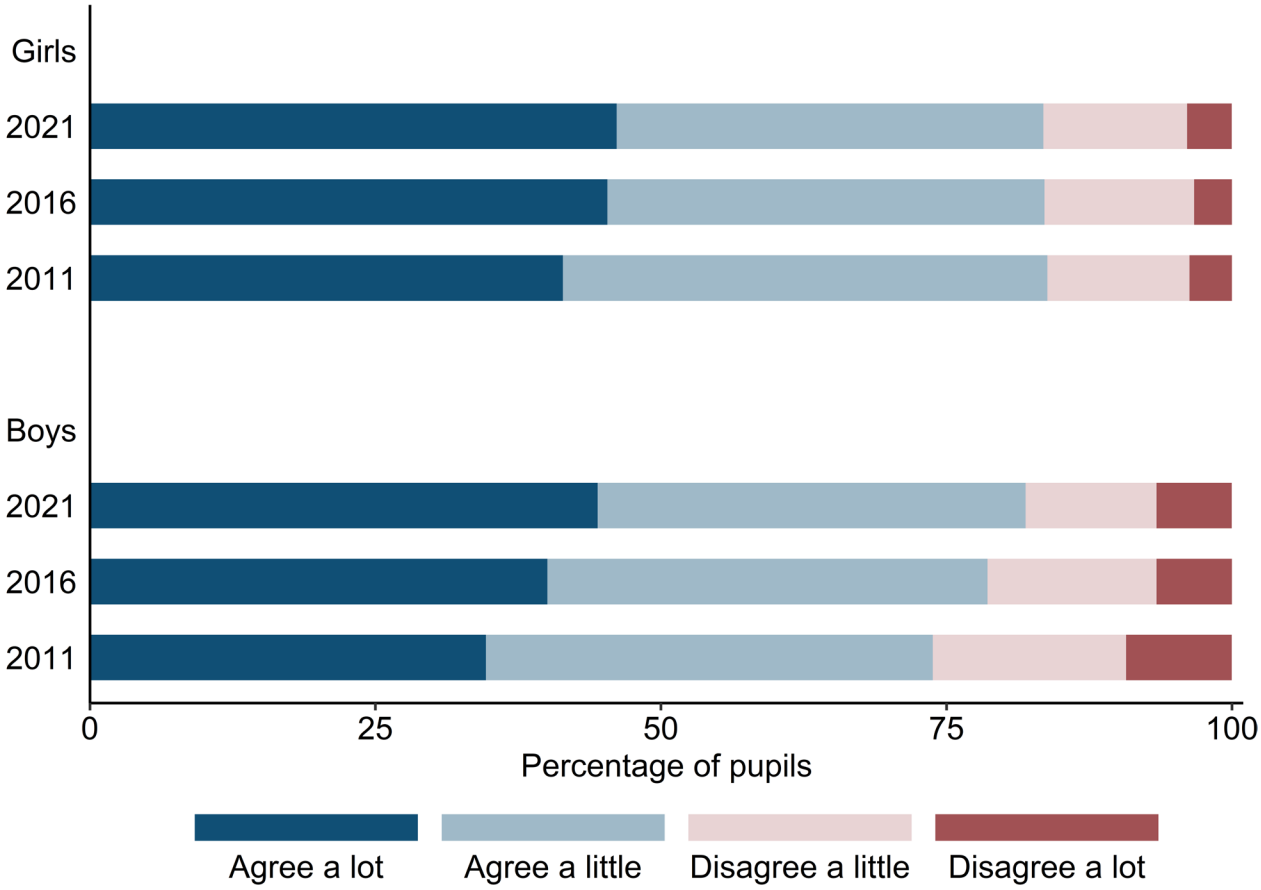
Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

7.4.4 Trends in engagement in reading lessons

For reasons similar to those explained above for the 'Confident in Reading' and 'Liking of Reading' Scales, we focus on the trend over time not for the overall 'Engaged in Reading Lessons' Scale but for one of the items contributing to it, as this item was included for multiple cycles of PIRLS. The item asked pupils to respond to the statement, 'my teacher gives me interesting things to read'. **Figure 27** shows the proportion of girls and boys in England providing each response to this question in PIRLS 2011, PIRLS 2016, and PIRLS 2021.

Responses to this question in England have become slightly more positive over time, particularly for boys. While 26% of boys either slightly or strongly disagreed with this statement in PIRLS 2011, this figure is only 18% in PIRLS 2021, and there has been a 9% increase over the same period in the proportion of boys who 'agree a lot'. Change over time in girls' responses has been more modest, with only a small increase across cycles in the proportion of girls who agree strongly and little difference in the proportions of girls who disagree that their teacher gives them interesting things to read. The proportions of girls and boys who agree that their teacher gives them interesting things to read is roughly the same between girls and boys in England in PIRLS 2021.

Figure 27: Percentages of girls and boys in England providing responses to the statement 'My teacher gives me interesting things to read' across the last 3 PIRLS cycles



Gender and Cycle	Agree a lot	Agree a little	Disagree a little	Disagree a lot
Girls - 2021	46%	37%	13%	4%
Girls - 2016	45%	38%	13%	3%
Girls - 2011	41%	42%	12%	4%
Boys - 2021	44%	37%	11%	7%
Boys - 2016	40%	39%	15%	7%
Boys – 2011	35%	39%	17%	9%

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.5 Time spent reading outside of school

The PIRLS questionnaire completed by pupils also included questions about pupils' reading behaviours. This included asking pupils about how much time they spend reading outside of school, specifically:

> "How much time do you spend reading outside of school on a normal school day?"

Pupils were instructed to choose between 4 response categories: "Less than 30 minutes", "30 minutes up to 1 hour", "From 1 hour up to 2 hours" or "2 hours or more".

Table 42 shows the proportions of pupils in England and comparator education systems reporting that they spend different amounts of time each day reading outside of school.

Table 42: Pupils' time spent reading outside of school each day in England and comparator systems

Education system	Two hours or more	One hour to two hours	30 minutes to an hour	Less than 30 minutes
England	7%	9%	35%	49%
Singapore	13%	15%	35%	37%
Hong Kong	9%	14%	37%	40%
Australia	9%	9%	32%	50%

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

Almost half of pupils in England reported that they spend less than 30 minutes each day reading outside of school. This was slightly higher than the International Median of 44%, but similar to Australia. Outside of the direct comparators included in **Table 42**, Bahrain, Finland, Italy, Macao SAR, Oman, New Zealand, the United States and Portugal all had a similar proportion of pupils who reported spending less than 30 minutes a day reading outside of school. A smaller proportion of pupils in England also reported that they read for two hours or more each day than was true in comparator education systems. Of the comparator systems, Singapore had the highest proportion of pupils reporting that they read for at least two hours outside of school each day, and the lowest proportion reading for less than 30 minutes.

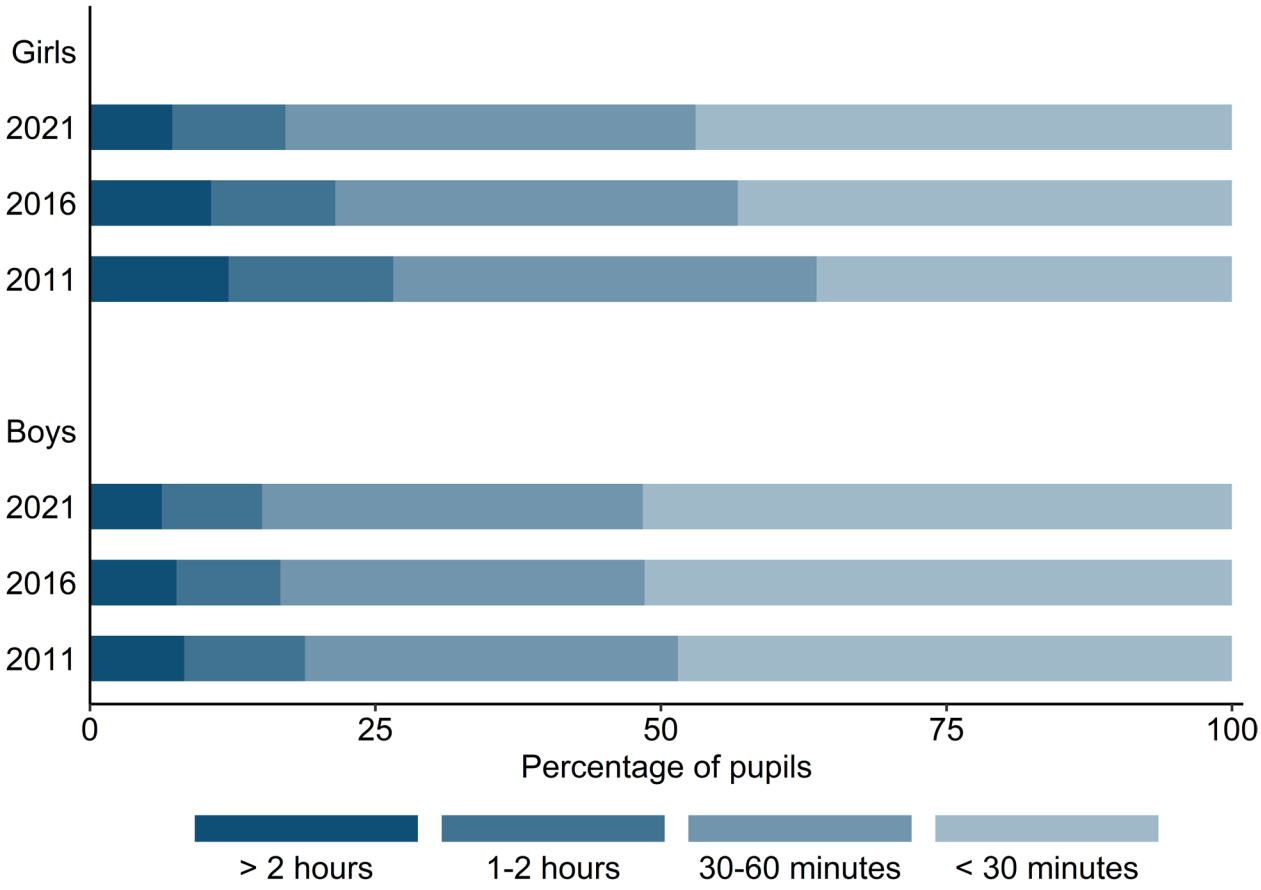
Beyond the education systems included in direct statistical comparisons in this report, other high-performing systems where pupils reported higher-than-average amounts of out-of-school reading included Germany and Taiwan. The 4 education systems with the lowest proportion of pupils reporting spending two or more hours each day reading outside of school were all Scandinavian, including Finland (4%), Sweden (3%), Norway (3%) and Denmark (2%). Amongst other English-speaking education systems, the

proportions of pupils reporting spending two or more hours each day reading outside of school varied somewhat, from fairly low in the United States (6%) and Northern Ireland (6%), slightly higher in Ireland (8%) and Australia (9%), to relatively high in New Zealand (11%).

The International Median score for pupils who read for 2 hours or more each day was 532, compared to 506 for pupils that read for less than 30 minutes each day. This compares to scores of 580 and 536, respectively, for pupils in England.

Focusing on England, **Figure 28** shows how the amount of time spent reading outside of school has changed over the 2011, 2016, and 2021 cycles of PIRLS for girls and boys. Across all 3 cycles, boys in England have reported less time reading spent outside of school than girls. However, this gap has been narrowing because of considerably larger reductions in the time spent reading by girls. While only 36% of girls reported spending less than 30 minutes a day reading in 2011, this figure stands at 47% for PIRLS 2021. Boys showed a more modest increase in the proportion reporting that they read for less than 30 minutes a day, from 49% to 52% over the same time period.

Figure 28: Percentages of girls and boys in England reporting different amounts of time they spend reading outside of school each day



Gender and Cycle	Two hours or more	One hour to two hours	30 minutes to an hour	Less than 30 minutes
Girls - 2021	7%	10%	36%	47%
Girls - 2016	11%	11%	35%	43%
Girls - 2011	12%	14%	37%	36%
Boys - 2021	6%	9%	33%	52%
Boys - 2016	8%	9%	32%	51%
Boys – 2011	8%	11%	33%	49%

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

7.6 Contextualisation: The relationship between reading enjoyment and reading achievement in Norway

There is well established evidence to suggest that there is a positive relationship between reading enjoyment and reading achievement. In other words, children who like reading typically score higher on tests of reading achievement than those who do not like

reading. Findings from PIRLS have added to the body of research exploring this relationship by showing that pupils with positive attitudes towards reading have higher overall achievement. The relationship between reading attitudes and achievement, however, is generally a reciprocal one and not causal (Toste et al., 2020). Added to this, the number of influential factors in what contributes to positive (or negative) attitudes towards reading means that reading enjoyment can vary considerably both across and within contexts (Rogiers et al., 2020). **Box 7.1** explores the relationship between enjoyment of reading and reading achievement in an education system with high achievement, but low percentages of pupils who enjoy reading – Norway.

Box 7.1 Norway: High reading achievement, but low enjoyment

The relationship between reading attitudes and achievement is well recognised across a range of studies and assessments, however, there are large variations of the rate at which pupils from both high and low performing education systems report enjoying reading. In some of the high performing education systems in PIRLS, there are substantial numbers of pupils reporting that they do not enjoy reading. Norway, for instance, has high overall achievement in PIRLS (539), but only 59% of pupils report that they like reading, the lowest percentage across all participating education systems. South Africa, on the other hand, is the lowest performing education system in PIRLS in terms of average achievement (288) but 90% of South African pupils report that they like reading.

It is important to note that in both education systems the positive relationship between achievement and enjoying reading is still clear. In Norway, pupils who say they like reading ‘very much’ have higher average PIRLS scores (556) than those who report ‘somewhat’ liking reading (547), and those who ‘do not’ like reading have the lowest average PIRLS scores (528). Similar findings for Norway are also seen in other international tests of reading such as PISA, as well as national tests of reading (Vestheim et al., 2019).

Results showing that Norwegian pupils have low motivation to read, such as those from PISA and PIRLS, have led to policy changes that focus on improving reading skills as well as improving motivation in school (Wagner & Støle, 2022). Research focused on understanding the factors that play a role in attitudes towards reading is also prevalent in Norway, and findings indicate that home-related factors such as socio-economic status and parental attitudes towards reading are influential (Çaliskan & Ulas, 2022; Frønes et al., 2020; Støle et al., 2020). The children of parents who report that they enjoy reading typically also have positive attitudes toward reading, while children from homes with lower socio-economic status and fewer books in the home, have less positive attitudes towards reading.

The relationship between reading attitudes and gender has also received considerable attention in Norway. In PIRLS 2021, the gap between boys and girls who ‘very much like reading’ is less substantial than for the majority of education systems; 15% of girls reported that they very much like reading while 12% of boys reported the same level of enjoyment. Researchers have also been exploring different consequences of reading assessments conducted on screen versus on paper compared to reading on paper (Dahan et al., 2018; Engdal Jensen, 2020; Kong et al., 2018). Findings revealed that although children often report that they prefer reading on screens, their reading comprehension can be negatively affected if the mode of the test is digital, and the consequences are more severe for boys than for girls.

8 School environment and teacher characteristics

Chapter overview

This chapter explores how school environment and teacher characteristics relate to reading performance in PIRLS 2021. Three areas are examined: Characteristics and practices of the teacher, characteristics and climate of the school, and extent of parental involvement in pupils' school experiences. Teacher characteristics include teachers' qualifications, years of experience, and overall career satisfaction as well as teaching practices such as strategies for teaching reading and use of instructional materials in reading lessons. School climate includes factors such as emphasis on academic success, perceptions of safety and discipline at the school, and pupils' reports of bullying at school. Parental involvement is considered in terms of involvement in the school and in children's learning. The chapter concludes with a discussion of the emphasis on academic success and achievement in the United Arab Emirates.

Key findings

- In England, a majority of the pupils who participated in PIRLS 2021 had teachers who reported having a postgraduate degree or higher (including PGCEs). There is no clear relationship between the average performance of pupils in PIRLS 2021 and the formal education levels of their teachers.
- Pupils in England who participated in PIRLS 2021 were taught by teachers with an average of 11.5 years teaching experience. For England and comparators, there is no clear association observed between years of teaching experience and PIRLS performance.
- Just under half of pupils' teachers in England report being 'very satisfied' in their careers. This is lower than the International Median. However, there is no strong relationship between teacher career satisfaction and pupils' overall performance in PIRLS 2021 across England or across the comparator systems.
- In England, most pupils' teachers report that their schools place a high emphasis on academic success. In every education system in PIRLS 2021, the performance of pupils whose teachers reported that their schools place a 'very high' emphasis on academic success.

Continues on next page

Chapter overview (continued)

- The association between headteachers reports of school discipline and PIRLS achievement across all participating education systems shows that on average, pupils in schools with hardly any problems with discipline score 30 points higher in PIRLS than those in schools with moderate to severe problems. In England, this range is even higher, pupils in schools with hardly any problems have an average PIRLS score 50 points higher than those in schools with moderate to severe problems.
- Almost half of pupils who participated in PIRLS 2021 in England report experiencing bullying at least monthly at school. Across all participating education systems, pupils who report experiencing bullying more frequently had lower average performance in PIRLS 2021.
- Reports of parental commitment and support of pupil achievement in England are lower than comparators and low internationally. Generally, pupils in schools where reports of parental commitment and support are high, have higher average achievement in PIRLS 2021.

8.1 Teacher characteristics and teaching practices

To provide context for PIRLS 2021 results, teachers of pupils who participated in PIRLS completed a questionnaire related to their backgrounds, their training and professional development, and their teaching practice. In order to present nationally representative information, the data presented throughout this chapter pertains to percentages of pupils whose teachers answered in a particular category on this questionnaire, and not proportions of teachers themselves.

8.1.1 Teacher qualifications and professional development

Table 43 presents the percentages of pupils whose teachers reached or exceeded different levels of education for England and comparators. In England, a majority (62%) of the pupils who participated in PIRLS 2021 had teachers who reported having a postgraduate degree or higher. This is a change from previous cycles where only 8% of pupils' teachers reported having a postgraduate degree. This change is likely to due to an adaptation made to this question on the PIRLS 2021 teacher questionnaire for England. The Post Graduate Certificate in Education (PGCE) is the typical route into teaching for teachers in England and is considered equivalent to a postgraduate degree. Previously, the low percentage of teachers reporting that they had a postgraduate degree in PIRLS questionnaires was thought to be attributable to teachers not interpreting their PGCE qualification as a postgraduate degree. To account for this, 'PGCE' was

specifically added as an option in the postgraduate degree category in the PIRLS 2021 questionnaires for England. This inclusion of PGCE was made for England's questionnaires but not all participating education systems, added to this teacher education routes vary considerably across education systems. This means that comparisons between education levels of teachers across different education systems should be interpreted cautiously.

In England, Hong Kong, and Australia, almost all pupils (more than 98%) are taught by teachers who report having a bachelor's degree or higher. In Singapore this percentage is lower (88%) which is similar to the International Median (86%). Singapore is the only education system in this group of comparator systems where some pupils (8%) are taught by teachers who report not having any post-secondary qualification. There is no clear relationship between the average performance of pupils in PIRLS 2021 and the formal education levels of their teachers. It is important to note that the inclusion of PGCE was made for England's questionnaires, but not for the questionnaires of other participating education systems, furthermore teacher education routes vary considerably across contexts. This means that comparisons between education levels of teachers across different education systems should be interpreted cautiously.

Table 43: Percentage of pupils in England and comparator systems whose teachers have reached or exceeded different education levels (2021)

Education system	Postgraduate Degree or higher *	Bachelor's degree	Post-secondary, non-tertiary education	Upper secondary qualification or lower **
England	62%	36%	1%	<1%
Singapore	15%	73%	4%	8%
Hong Kong SAR	36%	63%	<1%	<1%
Australia	17%	81%	2%	<1%

** Postgraduate degrees or higher include PGCE qualifications in England*
*** Upper secondary qualifications or lower include A-level qualifications in England*
Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 44 presents the percentage of pupils whose teachers report that their formal training placed an emphasis on language, teaching of reading, and reading theory. Internationally, the aspect of reading education most emphasised in formal training is language, where the International Median reveals that 72% of pupils' teachers reported it as an area of emphasis. In England, 79% of pupils' teachers report that language is an area of emphasis in their training, a slight increase from 74% in 2016. Of the comparators, Singapore had the highest percentage of pupils whose teachers reported language as an area of emphasis (87%).

Reports of pedagogy and/or teaching reading as an area of emphasis in England have increased from previous cycles. In PIRLS 2011, just under half of pupils' teachers (48%) reported that pedagogy was an area of emphasis in their formal training. This increased to 65% in PIRLS 2016 and now 71% in the 2021 cycle. The International Median for pedagogy and/or teaching reading as an area of emphasis is 65%, equal to Hong Kong's average but slightly lower than all other comparators in this area.

Table 44: Percentage of pupils in England and comparator systems whose teachers' formal training emphasised different aspects of reading education (2021)

Education system	Average PIRLS Score	Language	Pedagogy / Teaching Reading	Reading Theory
England	558	79%	71%	30%
Singapore	587	87%	80%	31%
Hong Kong SAR	573	80%	65%	23%
Australia	540	72%	78%	39%

Source: IEA's PIRLS 2021

Across England and comparators, reading theory is the aspect of reading education that the lowest percentage of pupils' teachers reported as an area of emphasis. In England, 30% of pupils' teachers said that it was emphasised, which is an increase from 16% in PIRLS 2016. Hong Kong had the lowest percentage reporting that reading theory was an area of emphasis (23%) among the comparators. Australia had the highest percentage of reports that reading theory was emphasised (39%). The International Median for reading theory as an area of emphasis in formal training is 35%. In England and internationally, there is no relationship evident between different aspects of reading education emphasised in formal training and pupils' overall performance in PIRLS 2021.

Table 45 shows the years of teaching experience that pupils' teachers have in England and comparators, according to 4 categories: less than 5 years, 5-9 years, 10-19 years, 20 years or more. In England, pupils who participated in PIRLS 2021 are taught by teachers with an average of 11.5 years teaching experience, which is the lowest across all comparator systems. England is among just 5 participating education systems where the average number of years of teaching experience is less than 12 years, the others being the United Arab Emirates, Qatar, Jordan, and Bahrain. Internationally, pupils who participated in PIRLS 2021 are taught by teachers who have an average of 18 years of teaching experience. Consistent with the findings in PIRLS 2016, for many education systems, including England and all of the comparator systems, there is no clear association observed between teaching experience and PIRLS performance; while pupils in England whose teachers have 20 years or more had slightly higher average PIRLS

performance than those in other categories, the next highest-performing group were pupils whose teachers have less than 5 years' experience.

Table 45: Percentage of pupils in England and comparator systems whose teachers have different amounts of teaching experience (2021)

Education system	20 years or more	10-19 years	5-9 years	Less than 5 years
England	17%	31%	30%	22%
Singapore	35%	30%	20%	15%
Hong Kong SAR	42%	21%	16%	21%
Australia	27%	27%	33%	13%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 46 presents information about the reading-related professional development (e.g., workshops, seminars) that teachers of pupils who participated in PIRLS have received in the last 2 years. In England, 65% of pupils' teachers have participated in professional development related to teaching reading comprehension skills or strategies. This is lower than the percentage of pupils' teachers across comparator education systems but slightly higher than the International Median (60%) for the area of reading comprehension. Participation in professional development related to integrating literacies across the curriculum was similar but slightly lower than the other 2 areas, the International Median was 48% and just over half of pupils' teachers in England (52%) and Australia (57%) reporting recent professional development in this area. In Singapore and Hong Kong, participation in professional development related to reading comprehension was higher than professional development related to integrating literacies. There was no relationship observed between pupils' performance in PIRLS 2021 and their teachers' participation in different areas of reading-related professional development.

Table 46: Percentage of pupils in England and comparator systems whose teachers have participated in different areas of reading-related professional development (2021)

Education system	Teaching reading comprehension skills or strategies	Integrating literacies across the curriculum
England	65%	52%
Singapore	71%	29%
Hong Kong SAR	82%	40%
Australia	76%	57%

Source: IEA's PIRLS 2021

8.1.1 Teacher career satisfaction

The PIRLS 2021 scale for teacher job satisfaction is determined based on teachers' responses to the question:

"How often do you feel the following way about being a teacher?"

- I am content with my profession as a teacher
- I find my work full of meaning and purpose
- I am enthusiastic about my job
- My work inspires me
- I am proud of the work I do
- I feel appreciated as a teacher

The teacher job satisfaction scale was modified for the PIRLS 2021 cycle to include how often teachers feel appreciated. This means that it is not possible to consider trends in teacher job satisfaction across cycles.

Table 47 presents the percentages of pupils whose teachers reported different levels of job satisfaction in England and the comparator systems. Teacher job satisfaction is classified into 3 categories: 'very satisfied', 'somewhat satisfied', and 'less than satisfied'.

Table 47: Percentage of pupils in England and comparator systems whose teachers report different levels of career satisfaction (2021)

Education system	Very satisfied	Somewhat satisfied	Less than satisfied
England	44%	46%	10%
Singapore	42%	40%	18%
Hong Kong SAR	37%	45%	18%
Australia	49%	41%	10%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

In England, 44% of teachers reported being 'very satisfied' in their careers. This is lower than the International Median of 56%. Similarly, all comparators have lower proportions of pupils with 'very satisfied' teachers than the International Median, with Hong Kong having the lowest proportion (37%). There is no strong relationship between teacher career satisfaction and pupils' overall performance in PIRLS 2021 in England or in any of the comparators. In other words, pupils of teachers who report different levels of career satisfaction do not have substantially different average achievement in PIRLS 2021.

However, when considering pupils' teachers across all education systems, in education systems in which a very high proportion of pupils' teachers say they are 'very satisfied' in their careers, lower overall average performance in PIRLS 2021 is sometimes seen. For

example, more than 93% of pupils' teachers in Kosovo and Oman are 'very satisfied', but both have an overall average for PIRLS 2021 below 430. By contrast, in Poland, which is among the higher-performing education systems in PIRLS 2021 with a score of 549, the lowest proportion of pupils' teachers (27%) report being 'very satisfied'.

8.1.2 Strategies for teaching reading

PIRLS 2021 asks teachers about the tasks they assign in reading instruction to help pupils develop reading comprehension skills and strategies. Teachers report how frequently they ask pupils to perform each of the following 12 tasks:

A. Locate information within the text
B. Identify the main ideas of what they have read
C. Explain or support their understanding with text evidence
D. Compare what they have read with experiences they have had
E. Compare what they have read with other things they have read
F. Make predictions about what will happen next in the text they are reading
G. Make generalisations and draw inferences based on what they have read
H. Evaluate and critique the style or structure of the text they have read
I. Determine the author's perspective or intention
J. Self-monitor their reading (e.g., recognise when they don't understand)
K. Determine if a website is useful for a specific purpose
L. Evaluate the credibility of a website

The final 3 tasks in this list (J-L), which focus on self-monitoring and digital literacy strategies, are new to PIRLS 2021 and so comparisons with responses from previous cycles are not possible.

Table 48 and Table 49 present the percentages of pupils whose teachers ask them to perform each task at least once a week. In England, almost all pupils are asked to locate information in texts, identify the main ideas of what they have read, and to explain their understanding of what they read at least once a week. These 3 tasks are among the most frequently applied across all comparators as well as internationally. About 64% of pupils in England are asked to perform tasks associated with evaluating the style and structure of texts weekly, which is similar to the International Median (67%) as well as Hong Kong (68%) and Australia (67%). However, in Singapore less than half of pupils (43%) are asked to evaluate style and structure on a weekly basis.

When compared to the International Median (87%), pupils in England are asked to compare their reading to personal experiences slightly less frequently (78%). When considering digital literacy tasks, such as understanding the purpose of a website, it is less common for these to be assigned to pupils in England (29%) when compared to the

International Median (40%). Digital literacy tasks are most frequently assigned to pupils in Kosovo, Uzbekistan, and North Macedonia.

Table 48: Percentage of pupils in England and comparator systems whose teachers ask them to complete weekly tasks requiring reading skills A-F (2021)

Education system	A	B	C	D	E	F
England	99%	97%	99%	78%	70%	92%
Singapore	91%	87%	90%	80%	70%	83%
Hong Kong SAR	95%	98%	91%	78%	66%	79%
Australia	97%	95%	92%	90%	84%	94%

***A** - Locate information within the text.*
***B** - Identify the main ideas of what they have read*
***C** - Explain or support their understanding with text evidence*
***D** - Compare what they have read with experiences they have had*
***E** - Compare what they have read with other things they have read*
***F** - Make predictions about what will happen next in the text they are reading*

Source: IEA's PIRLS 2021

Table 49: Percentage of pupils in England and comparator systems whose teachers ask them to complete weekly tasks requiring reading skills G-L (2021)

Education system	G	H	I	J	K	L
England	98%	64%	68%	80%	29%	20%
Singapore	79%	43%	49%	62%	20%	16%
Hong Kong SAR	86%	68%	88%	53%	19%	14%
Australia	93%	67%	78%	88%	42%	34%

***G** - Make generalisations and draw inferences based on what they have read*
***H** - Evaluate and critique the style or structure of the text they have read*
***I** - Determine the author's perspective or intention*
***J** - Self-monitor their reading (e.g., recognize when they don't understand)*
***K** - Determine if a website is useful for a specific purpose*
***L** - Evaluate the credibility of a website*

Source: IEA's PIRLS 2021

8.1.3 Use of instructional materials

Teachers of pupils who participated in PIRLS 2021 were asked about the types of instructional materials they use regularly during reading lessons. The teachers answered questions about the frequency with which they assigned the following 8 text types related to both literary and informational texts:

Literary Reading Materials

A. Short stories (e.g., fables, fairy tales, action stories, science fiction, detective stories)
B. Longer fiction books with chapters

C. Plays
D. Poems/poetry

Informational Reading Materials
E. Nonfiction subject area books or textbooks
F. Longer nonfiction books with chapters
G. Nonfiction articles that describe and explain about things, people, events, or how things work (e.g., newspaper articles, brochures)
H. Non-continuous texts (e.g., diagrams, maps, illustrations, photographs, tables)

Table 50 presents the percentages of pupils whose teachers assign each of these text types at least once a week. In England, longer books (both literary and informational) are slightly more frequently assigned (82% for literary) than the International Median (33% for literary). This is also evident in Australia, where 86% of pupils are assigned longer fiction books by their teachers at least once a week, whereas only 11% of pupils in Hong Kong are assigned longer fiction books at least weekly. Across all comparators, it is relatively uncommon for plays and poetry to be assigned to pupils, and this is true across all participating education systems where the International Median is 7%.

Notably, Hong Kong has the highest relative performance in the Informational Purpose Scale compared to the Literary Purpose Scale of the comparators. However, the frequency at which pupils' teachers in Hong Kong report assigning informational texts is the lowest of the comparators and lower than the International Median for all informational text types. The International Median shows that across all education systems, the most frequently assigned informational text-type is non-fiction subject area books (e.g., textbooks) (70%), and the least frequently assigned informational text-type is longer non-fiction books (23%).

Table 50: Percentage of pupils in England and comparator systems whose teachers assign different instructional materials for reading (2021)

Education system	A	B	C	D	E	F	G	H
England	62%	82%	4%	10%	58%	32%	37%	38%
Singapore	71%	32%	2%	2%	56%	17%	54%	32%
Hong Kong SAR	55%	11%	1%	7%	41%	10%	28%	23%
Australia	87%	86%	15%	17%	83%	43%	60%	66%

***A** - Short stories*
***B** - Longer fiction books with chapters*
***C** – Plays*
***D** - Poems/poetry*
***E** - Nonfiction subject area books*
***F** - Longer nonfiction books with chapters*
***G** - Nonfiction articles*
***H** - Non-continuous texts*

Source: IEA's PIRLS 2021

Table 51 presents information from the pupil questionnaire related to pupils' interest in the reading materials assigned by their teachers. Pupils were asked the extent to which they agree with the statement 'My teacher gives me interesting things to read'. Across England and comparators, a majority of pupils agree that their teachers give them interesting things to read. There is a negative relationship between pupils' who disagree a lot with the statement, and their overall performance in PIRLS 2021. In other words, pupils who do not find their assigned reading materials interesting, scored lower in PIRLS 2021 than those who find their assigned reading materials interesting. For more detailed information on the relationship between pupils' motivations and attitudes to reading and their performance in PIRLS, see Chapter 7.

Table 51: Percentage of pupils in England who reported that their teacher gives them interesting things to read

Education system	Agree a lot	Agree a little	Disagree a little	Disagree a lot
England	45%	37%	12%	5%
Singapore	49%	35%	12%	5%
Hong Kong SAR	41%	40%	13%	6%
Australia	43%	37%	13%	6%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

8.2 School characteristics

8.2.1 Performance by school type

As discussed in section **1.2.2**, when conducting the sampling in England for PIRLS 2021, 2 main criteria were used. One of these was to ensure that there was a representative range of pupils from schools with different levels of historic performance in key stage 2 examinations. Five categories of key stage 2 performance were created using this approach, and this informed the school-level sampling for state-maintained schools and academies. These were labelled as 'low-performing', 'mid-low performing' 'middle performing', 'mid-high performing' and 'high performing'. The remaining schools in England's sample were independent schools. **Table 52** shows the distribution of PIRLS scores for pupils in England's PIRLS 2021 sample by the type of school they attend. The table shows that pupils' average performance in PIRLS was positively associated with the school's historic level of performance, with the average pupil at a high-performing school scoring approximately 28 points more than the average pupil at a low-performing school. However, across all school types, there were relatively wide ranges in PIRLS performance between the 10th and 90th percentiles. Pupils at independent schools scored, on average, higher than pupils in other schools.

Table 52: Performance of England's PIRLS 2021 cohort by the type of school they attend

School-type	Percentage of pupils	10th percentile	50th percentile	90th percentile	Range
Low performing	14.0	432	544	620	188
Mid-low performing	19.6	455	552	635	179
Middle performing	23.9	461	563	637	176
Mid-high performing	20.4	467	572	652	185
High performing	17.9	476	576	652	176
Independent	4.3	516	608	687	171

Range calculated as 90th percentile – 10th percentile.
Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

8.2.2 School climate

Alongside the teacher questionnaire, the contextual framework for PIRLS 2021 also includes a school questionnaire where headteachers respond to questions related to the school climate. Both questionnaires ask headteachers and teachers to respond to questions about the extent to which the school emphasises academic success, levels of safety at school, and problems associated with school discipline. The pupil questionnaire also asks questions related to the school climate such as how frequently pupils experience bullying at school. This section focuses on 4 of the scales related to school climate as reported by teachers, headteachers and pupils.

The first of these scales, school emphasis on academic success, was calculated based on teachers' responses to the following question:

> "How would you characterise each of the following within your school?"
>
> - Teachers' understanding of the school's curricular goals
> - Teachers' degree of success in implementing the school's curriculum
> - Teachers' expectations for pupil achievement
> - Teachers' ability to inspire pupils
> - Collaboration between school leadership and teachers to plan instruction
> - Parental involvement in school activities
> - Parental commitment to ensure that pupils are ready to learn
> - Parental expectations for pupil achievement
> - Parental support for pupil achievement
> - Pupils' desire to do well in school

- Pupils' ability to reach school's academic goals
- Pupils' respect for classmates who excel academically

Table 53 presents information related to the extent to which participating pupils' teachers believe that their school emphasises academic success for England and comparators. Across all education systems that participated in PIRLS 2021, the emphasis on academic success reported was typically high and so responses were categorised as either 'very high', 'high', or 'medium'.

In England, most pupils' teachers (61%) report that their school places a 'high' emphasis on academic success. This is more than the other comparators and also higher than the International Median (54%). Across all comparators there are fewer reports of schools that place a 'very high' emphasis on academic success. In England and Australia, 9% of pupils' teachers report that there is 'very high' emphasis, while in Hong Kong just 3% of schools report a 'very high' emphasis. Across all participating education systems, the average performance of pupils whose teachers reported their schools have a 'very high' emphasis on academic success is higher than those reported to have a 'high', and the lowest average performance was found in schools with a 'medium' emphasis on academic success. In England, pupils in schools with a 'very high' emphasis on academic success scored, on average, 37 points higher in PIRLS 2021 than schools where a 'medium' emphasis was reported. While the difference between achievement at the International Median is 22 points higher for pupils in schools with a 'very high' emphasis on academic success compared to those with a 'medium' emphasis.

Table 53: Percentage of pupils in England and comparator systems whose teachers believe different levels of emphasis are placed on academic success at the school

Education system	Very high emphasis	High emphasis	Medium emphasis
England	9%	61%	31%
Singapore	6%	42%	52%
Hong Kong SAR	3%	49%	48%
Australia	9%	48%	44%

Because of rounding some results may appear inconsistent.

Source: IEA's PIRLS 2021

Teachers were also asked about the levels of safety and orderliness at their schools. The scale for school safety and orderliness was calculated based on teachers' responses to the following question:

> "Thinking about your current school, indicate the extent to which you agree or disagree with each of the following statements?"

- This school is located in a safe neighbourhood
- I feel safe at this school
- This school's security policies and practices are sufficient
- The pupils behave in an orderly manner
- The pupils are respectful of the teachers
- The pupils respect school property
- This school has clear rules about pupil conduct
- This school's rules are enforced in a fair and consistent manner
- The pupils are respectful of each other

The reports of school safety and orderliness are categorised: 'very safe and orderly', 'somewhat safe and orderly', and 'less than safe and orderly'. Across all participating education systems, the highest percentage of pupils whose teachers report that their schools are 'very safe and orderly' are in Albania (94%) and Uzbekistan (93%). At the other end of the scale, a relatively high percentage of pupils' teachers said that their schools are 'less than safe and orderly' in South Africa (15%) and Sweden (9%), both well above the International Median of 1% for this category. **Table 54** presents the percentage of pupils whose teachers report different levels of safety and orderliness at school for England and comparators. Generally, education systems with a high average performance in PIRLS 2021 also had high frequencies of pupils' teachers reporting that their school was 'very safe and orderly'. In England, 67% of pupils' teachers said that their schools were 'very safe and orderly', and these pupils have an average score 16 points higher than those whose teachers said their schools were 'somewhat safe and orderly'. Australia has a higher-than-average percentage of pupils whose teachers report their schools were 'less than safe and orderly' at 6%, and the average performance of pupils at those schools is 42 points lower than for pupils at 'very safe' schools. In many of the participating education systems, including England, the low frequency of responses in the 'less than safe and orderly' category means that average performance of pupils in those schools cannot be reliably calculated.

Table 54: Percentage of pupils in England and comparator systems whose teachers report different levels of safety and orderliness at their school

Education system	Very safe and orderly	Somewhat safe and orderly	Less than safe and orderly
England	67%	32%	2%
Singapore	58%	41%	1%
Hong Kong SAR	61%	38%	<1%
Australia	58%	36%	6%

Because of rounding some results may appear inconsistent.

Source: IEA's PIRLS 2021

The school questionnaire asked headteachers to respond to 10 potential problems associated with school discipline:

- Arriving late at school
- Absenteeism (i.e., unjustified absences)
- Classroom disturbance
- Cheating
- Profanity
- Vandalism
- Theft
- Intimidation or verbal abuse among pupils (including texting, emailing, etc.)
- Physical fights among pupils
- Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.)

The responses to these problems form the school discipline scale were then classified as 'hardly any problems', 'minor problems' and 'moderate to severe problems'. **Table 55** presents the percentage of pupils in schools where headteachers report on the level of problems associated with school discipline in England and comparators. In England and the comparator systems, the percentage of pupils in schools with 'moderate to severe problems' with school discipline is substantially lower than those in schools with 'minor or hardly any problems'. In PIRLS 2016, the percentage of pupils in schools with 'hardly any problems' with discipline in England was higher than reports from PIRLS 2021 (82% vs 76%). Hong Kong had the highest percentage of pupils in schools with 'hardly any problems' with discipline (93%) across all participating education systems, and no pupils' headteachers reported that their school had 'moderate to severe problems' in Hong Kong. The association between school discipline and PIRLS achievement across all participating education systems shows that, on average, pupils in schools with 'hardly any problems' with discipline scored 24 points higher in PIRLS 2021 than those in schools with 'moderate to severe problems'. In England, this range is even higher, pupils in schools with 'hardly any problems' with discipline have an average PIRLS score 50 points higher than those in schools with 'moderate to severe problems'.

Table 55: Percentage of pupils in England and comparator systems whose headteachers report different levels of problems associated with school discipline

Education system	Hardly any problems	Minor problems	Moderate to severe problems
England	76%	22%	2%
Singapore	81%	19%	<1%
Hong Kong SAR	93%	7%	0%
Australia	69%	29%	2%

Because of rounding some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 56 shows reports from the pupil questionnaire about the frequency at which pupils experience bullying at school in England and comparator systems. Just over half of pupils in England (54%) stated that they 'never or almost never' experience bullying at school. This is lower than the International Median of 62%, and considerably lower than Hong Kong where 81% of pupils say they 'never or almost never' experience bullying. Internationally, Hong Kong has the lowest percentage of pupils who experience bullying on a weekly basis (3%). Reports of weekly experiences of bullying are similar in both England (11%) and Australia (13%), and in both education systems, 35% of pupils report experiencing bullying about once a month.

In England, pupils who experience bullying weekly have lower average achievement in PIRLS (518) than pupils who experience bullying monthly (555), while pupils who almost never experience bullying have the highest average achievement in PIRLS (568). The International Median (480) for pupils who experience bullying weekly is 53 points lower than those who never or almost never experience bullying (533). This negative association between the frequency of bullying experienced and average performance in PIRLS 2021 is evident in all education systems that participated.

Table 56: Percentage of pupils in England and comparator systems and the frequency of bullying they experience at school

Education system	Never or almost never	About monthly	Moderate to severe problems
England	54%	35%	11%
Singapore	59%	29%	12%
Hong Kong SAR	81%	16%	3%
Australia	52%	35%	13%

Because of rounding some results may appear inconsistent.

Source: IEA's PIRLS 2021

8.3 Parental involvement

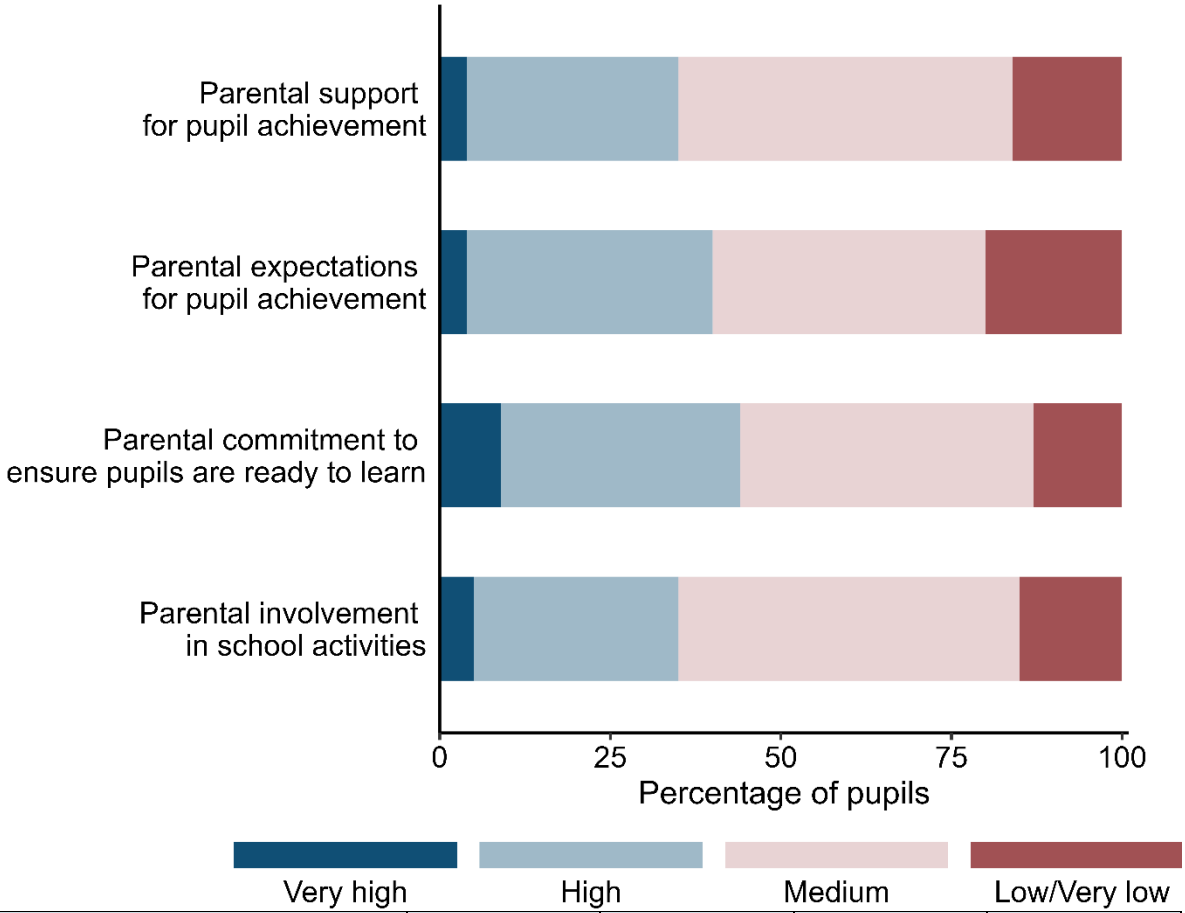
As part of the scale related to school emphasis on academic success, headteachers and teachers responded to items related to parent involvement and support for the school:

- Parental involvement in school activities
- Parental commitment to ensure that pupils are ready to learn
- Parental expectations for pupil achievement
- Parental support for pupil achievement

The section that follows describes the headteachers' perceptions of parent involvement in terms of each of these 4 aspects. In each aspect parental involvement is classified as either 'very high', 'high', 'medium', or 'low/very low'. Overall, teachers' perceptions of

parent involvement in terms of these aspects was similar to that of headteachers, further information related to teachers' perspectives on parental involvement is available in Appendix D. **Figure 29** shows the percentage of pupils in England whose headteachers report different levels of parental involvement for each aspect. Across all 4 aspects, parent involvement in England is typically reported to be 'high' or 'medium', with low percentages of pupils' headteachers reporting that parental involvement is 'very high' in any aspect. The tables that follow in this section describe the different levels of parental involvement in more detail for England and its comparators.

Figure 29: Perceptions of the level of parental involvement in different aspects of pupils' educational experiences - headteachers in England (2021)



Aspect of parental involvement	Very High	High	Medium	Low / Very Low
Support for pupil achievement	4%	36%	40%	20%
Expectations of pupil achievement	5%	30%	50%	15%
Commitment to ensuring pupils are ready to learn	9%	35%	43%	13%
Involvement in school activities	4%	31%	49%	16%

Because of rounding some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 57 shows the percentages of pupils whose headteachers feel that parents are involved in school activities and their relative performance in PIRLS 2021. In England, just 4% of pupils' headteachers believe parents are very involved in school activities. This is lower than the corresponding percentages for comparators (10%). The percentage of pupils whose headteachers believe that there is low/very low involvement from parents in school activities is lowest in Singapore (5%), and higher in England (21%) and Australia (25%). Pupils in schools in England where parents are rated as having higher levels of involvement in school activities (i.e., 'very high', 'high' or 'medium') have reasonably consistent average achievement in PIRLS 2021. However, in schools where reports of parental involvement is 'low/very low' in England there is notably lower average PIRLS 2021 achievement.

Table 57: Percentage of pupils in England and comparator systems whose headteachers believe that parents are involved in school activities

Education system	Very high involvement	High involvement	Medium involvement	Low involvement
England	4%	36%	40%	21%
Singapore	10%	46%	38%	5%
Hong Kong SAR	10%	40%	34%	15%
Australia	10%	33%	32%	25%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 58 shows the percentages of pupils whose headteachers believe that parents are committed to ensuring pupils are ready to learn. The majority of pupils' headteachers in England believe that parental commitment is either 'high' or 'medium', with some reports of 'low/very low' (16%) parental commitment and relatively few reports of 'very high' (5%) parental commitment. A similar trend across categories is seen in Hong Kong, where parental commitment is typically reported as either 'high' or 'medium'. Singapore and Australia both have the same level of 'very high' parental commitment (13%), however, at the other end of the scale they differ. In Singapore just 3% of pupils' headteachers report that parental commitment is 'low/very low', compared to 11% in Australia.

No strong relationship is evident between parental commitment and pupils' average achievement in Hong Kong. In England, Singapore and Australia, however, pupils in schools where headteachers reported that parental commitment is 'high' or 'very high' score higher on average than those in schools reporting lower levels of parental commitment. Where there are a low proportion of responses particularly in the 'very high' and 'low/very low' categories, differences in pupil performance represent a just small sample of pupils and should be interpreted with some caution.

Table 58: Percentage of pupils in England and comparator systems whose headteachers believe that parents are committed to ensuring that pupils are ready to learn

Education system	Very high commitment	High commitment	Medium commitment	Low commitment
England	5%	30%	50%	16%
Singapore	13%	52%	33%	3%
Hong Kong SAR	5%	25%	52%	18%
Australia	13%	42%	35%	11%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 59 presents the different levels of parental expectations for pupil achievement reported by pupils' headteachers in England and comparators. In England the percentage of pupils' whose headteachers report parents have 'very high' expectations for pupil achievement is 9%. This is lower than the International Median of 18% and also lower than all comparators. In both Singapore and Australia, almost a quarter (24%) of pupils' headteachers report that parents have 'high' expectations for pupil achievement. At the other end of the scale, England has the highest percentage of 'low/very low' reports of parental expectations (12%) among comparators. Indeed, the percentage of pupils whose parents have low expectations for pupil achievement in England is among the 4 highest across all participating education systems. The other 3 education systems with high proportions of pupil's headteachers reporting 'low/very low' expectations for pupil achievement are Morocco, South Africa and Jordan. Pupils at schools where headteachers report parents have 'very high' expectations for pupil achievement score higher than those at schools where parents are reported to have lower expectations. This trend is evident in England and internationally.

Table 59: Percentage of pupils in England and comparator systems whose headteachers believe that parents have high expectations for pupil achievement

Education system	Very high expectations	High expectations	Medium expectations	Low expectations
England	9%	35%	43%	12%
Singapore	24%	53%	22%	1%
Hong Kong SAR	15%	41%	41%	3%
Australia	24%	41%	32%	3%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

A similar pattern in parental commitment to pupil achievement is evident in reports of parental support in ensuring high pupil achievement. **Table 60** shows the different levels of parental support for pupil achievement as reported by pupils' headteachers in England and comparators. In England, a relatively low percentage of pupils' headteachers report 'very high' levels of parental support for pupil achievement (4%). This is the same as the percentage of pupils whose headteachers report 'very high' parental support in Hong Kong, however, the pattern in England shows that there are relatively more reports of 'low/very low' parental support (16%) than in all other comparators. Generally, internationally there is a positive relationship between higher levels of parental support and higher performance in PIRLS 2021. In England, the pupils whose headteachers report that their parents have a 'high' level of support is an average of 43 points higher than those whose parental support is 'low/very low'.

Table 60: Percentage of pupils in England and comparator systems whose headteachers believe that parents support the school in ensuring high pupil achievement

Education system	Very high support	High support	Medium support	Low support
England	4%	31%	49%	16%
Singapore	12%	57%	29%	<2%
Hong Kong SAR	4%	41%	47%	8%
Australia	13%	38%	42%	7%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

9 Impact of the COVID-19 pandemic

Chapter overview

This chapter explores the impact of the COVID-19 pandemic on PIRLS 2021 in England and comparator education systems. It discusses changes made to data collection procedures, as well as survey responses from school leaders regarding the impact of the pandemic on normal school operations and provision of remote learning resources during periods of disruption. Finally, it discusses how the COVID-19 pandemic may have contributed to differences between observed trends and those that might have been expected between the 2016 and 2021 cycles of PIRLS.

Key findings

- The impact of the COVID-19 pandemic on data collection differed across education systems. Many went ahead with data collection as planned, but 14 education systems delayed data collection by 6 months and tested pupils at the beginning of the fifth year of formal schooling, and 6 systems (including England) delayed data collection by 12 months and tested pupils at the beginning of their fourth year of formal schooling as originally planned.
- There was widespread disruption to normal school operations in the 2020/21 school year across most of the participating education systems, but also substantial variation in the number of weeks affected. For systems that delayed data collection, reported disruptions to school operations referred to a different time period than that in which pupils were tested for this cycle of PIRLS. However, they were also asked to report about school disruptions specifically related to the 2020/21 school year.
- The vast majority of schools offered a variety of resources to support pupils and teachers when normal school operations were disrupted due to the COVID-19 pandemic in the 2020/21 school year. Printed resources and access to digital devices for pupils were less commonly offered than other distance learning resources internationally, but schools in England frequently offered both.
- We cannot exactly predict what results might have been in the absence of the COVID-19 pandemic, but observed trends in reading performance across the 2016 and 2021 cycles suggest that performance decreased in a majority of education systems that did not delay data collection, and either decreased or remained fairly stable in systems that delayed by 12 months and tested the same age group as originally planned. Where older pupils were tested after a 6-month delay, performance increased in a majority of education systems, but it is difficult to disentangle the age effect from any impact of COVID-19.

9.1 Introduction

The COVID-19 pandemic had a substantial impact on school operations in education systems around the world. Although the trends from PIRLS 2016 to 2021 may provide some insight into the potential impact of the pandemic, it is essential to note that PIRLS 2021 was not designed to measure the effects of the COVID-19 pandemic on pupils' reading achievement.

As a result of the pandemic, there were a number of changes to the way in which PIRLS was conducted in England. Data collection was delayed by 12 months, which was one of the choices open to education systems participating in PIRLS. In section **9.2**, we briefly review the impact of the COVID-19 pandemic on data collection for PIRLS 2021 internationally. Items were added to the school and curriculum context questionnaires to collect information related to school closures, COVID-19 impact and remote learning provision. In section **9.3**, we report results based on these items and place these in the broader context of education policy in England in response to the COVID-19 pandemic. In section **9.4**, we discuss differences between observed and expected trends between the 2016 and 2021 cycles of PIRLS, and consider how decisions taken in England and other participating systems about whether and for how long to delay data collection seem to have affected the impact of COVID-19 on PIRLS 2021 performance.

9.2 Impact of COVID-19 on data collection

Disruptions to normal primary school operations impacted data collection considerably. As noted in section **1.2.3**, participating education systems fell into 3 broad groups according to whether and how they made adjustments to the original data collection plans for PIRLS 2021. Two Southern Hemisphere and 35 Northern-Hemisphere education systems chose not to make any adaptations and tested pupils at the end of their fourth year of schooling according to the original timeline. Fourteen Northern Hemisphere systems delayed testing by 6 months, and tested pupils at the beginning of their fifth year of formal schooling. Three Southern Hemisphere and 3 Northern Hemisphere systems (including England) tested pupils in the age group originally intended, i.e., pupils who were at the end of their fourth year of formal schooling (year 5 in England), but tested one year later than originally planned.

In England, another adaptation to data collection made due to the COVID-19 pandemic was that schools were given the option to self-administer PIRLS 2021 if they preferred to do so. Training was provided for internal administrators (i.e., members of school staff) to facilitate this. Remote training was provided for both scorers and test administrators (von Davier et al., 2023), and this training included guidance on additional COVID-19 requirements for test administration (Kayton & McGrane, 2022).

9.3 Impact of COVID-19 on school operations

Headteacher questionnaires in England and in most education systems participating in PIRLS 2021 included a limited number of questions concerning the effect of the pandemic on school operations and the remote learning provision when face-to-face instruction did not take place due to any periods of school closure. For the sake of comparability across education systems, these questions specifically referred to the 2020/21 school year regardless of when individual systems collected their data, but the phrasing of these questions referred to "the current academic year (2020/21)". Inferences drawn from the responses to these items, and comparisons regarding these results across systems, must therefore be cautious at best – headteachers in England, for example, would have had to respond based on their best recollection of the previous year (2020/21) while pupil performance was measured in 2021/22, and some may have mistakenly responded based on the "current academic year" (2021/22). It is also important to note that while Singapore is one of the comparators for which results are reported in other chapters of this report, Singapore is not included in results reported below because COVID-19 pandemic-related information was not collected there.

9.3.1 School closures

There were 2 nationwide school closures in England in 2020/21, one lasting from March to September 2020 and then another from late December 2020 to early March 2021. Some pupils (including children of critical workers and children classified as vulnerable) continued to access at least some in-person learning, but most pupils were affected by these closures (see Kayton & McGrane, 2022 for a more detailed account). In PIRLS 2021, headteachers were asked to indicate the number of weeks in which primary school operations were affected by the COVID-19 pandemic in 2020/21. **Table 61** shows the percent of headteacher responses by ranges of number of weeks affected (from 'Not affected' to 'More than 8 weeks') in England, Hong Kong, and Australia. Note that Singapore, the remaining comparator, did not administer questionnaire items relating to the COVID-19 pandemic.

Table 61: Number of weeks in which primary school operations were affected by the COVID-19 pandemic in 2020-21 (percent of schools[7] by education system)

Education system	Not affected	Less than 2 weeks	2-4 weeks	5-8 weeks	More than 8 weeks
England	22%	12%	10%	15%	41%
Hong Kong SAR	5%	7%	16%	14%	59%
Australia	11%	20%	14%	9%	46%
International Median	12%	10%	13%	12%	41%

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

There was considerable variation in the number of weeks affected across schools in England as well as in comparator education systems. In nearly half of the participating schools in England and Australia, and more than half of the participating schools in Hong Kong SAR, primary school operations were reported to have been affected for more than 8 weeks of the 2020/21 school year.

The apparent variation across education systems in terms of the proportions of schools in which operations were affected for different amounts of time may be related to accuracy of headteacher reporting to some extent, and owing to the phrasing of the question, some may have reported on the current year (e.g., in Hong Kong, where they were reporting weeks affected in the year of data collection, versus in England and Australia where they were reporting weeks affected in the previous year). Still, this variation across systems can be seen as an indication of how the COVID-19 pandemic affected primary school operations differently across contexts, which introduces complexities in interpreting comparative results from PIRLS 2021 internationally.

9.3.2 Remote learning provision

Headteachers were also asked whether their schools provided remote instruction or distance learning resources for primary grades when normal school operations were affected by the COVID-19 pandemic, followed by a question asking whether or not specific types of support for remote learning were offered, including:

- Delivery of printed learning materials to pupils
- Internet-based resources for pupils
- Access to digital devices for pupils

[7] Please note that results in this report may differ from the results reported by the IEA where school-level responses are analysed. This is because in this report school weights were used to analyse school-level responses, while IEA results analysed school-level responses using student weights. Conclusions are not substantially affected either way, but exact numbers may differ slightly.

- Recommendations for teachers about how to provide online instruction
- Technical support for teachers
- Access to digital devices for teachers

Table 62 shows the percentages of schools that offered remote instruction or distance learning resources in general, as well as the percentages offering each type of support for remote learning in 2020/21 when normal school operations were affected by the pandemic. The vast majority of all participating schools offered all of these resources when normal operations were disrupted by the COVID-19 pandemic, according to headteacher responses, and nearly all offered at least some sort of remote instruction or distance learning resources.

In England, this is hardly surprising, as Government guidance required schools to provide access to remote learning in any instance where school-age children could not attend school as a result of public health advice, and there were statutory expectations for remote learning provision in these circumstances (see Kayton & McGrane, 2022 for further details). International Median results suggest that it was slightly less common internationally for schools to offer delivery of printed learning materials or access to digital devices for pupils, but in England and comparators printed learning materials were somewhat more commonly provided, and in England provision of access to digital devices for pupils was widespread.

Table 62: Resources offered when normal school operations were disrupted by the COVID-19 pandemic (percent of schools by education system)

Offered by schools during periods of disruption?	England	Hong Kong SAR	Australia	International Median
Remote instruction/ distance learning resources	99%	98%	94%	97%
Delivery of printed learning material to pupils	89%	87%	90%	82%
Internet-based resources for pupils	97%	100%	100%	98%
Access to digital devices for pupils	95%	88%	79%	80%
Recommendations for teachers about how to provide online instruction	97%	100%	95%	97%
Technical support for teachers	94%	100%	94%	93%
Access to digital devices for teachers	97%	97%	98%	93%

Some results may appear inconsistent due to rounding.

Source: IEA's PIRLS 2021

9.3.3 Catch-up programmes

Although PIRLS 2021 did not collect specific data on catch-up programmes, a brief account of what was offered to schools in England to mitigate the disruption to children's learning due to the COVID-19 pandemic helps to contextualise insights and findings from PIRLS 2021. Catch-up provision is multifaceted and not all specifically focused on a particular subject area (or focused on Science, Technology and Mathematics rather than on reading). Here, we focus on what has been offered to pupils with direct or close relevance to reading.

The National Tutoring Programme was put in place by the Department for Education as one of the core elements of catch-up provision for pupils. This programme provided and continues to provide funding for primary and secondary schools to spend on targeted academic support, which could take the form of academic mentors with full-time dedicated roles providing intensive and targeted support, external tuition partners brought in to offer additional support, or school-led tutoring provided by school personnel (Department for Education, 2022). Total funding for this programme includes £1bn over 4 years to 2023/24, with £350m provided to schools in 2022/23. The National Tutoring Programme was closely linked to the catch-up premium offered to schools for the 2020/21 school year (£650 million in total across England in 2020/21; Department for Education, 2021).

Free online lessons have been another relevant type of provision on offer to try to catch pupils up after COVID-19 interruptions to learning. For example, Oak National Academy (an independent public body; https://www.thenational.academy/) offers a range of content across subject areas to support pupil learning and enrichment.

9.4 Expected performance trends 2016-2021 vs observed performance trends 2016-2021

As the previous sections indicate, the COVID-19 pandemic impacted data collection for PIRLS 2021 as well as normal school operations internationally. As a result, it also introduced considerable complexity to the interpretation of results and trends over time across participating education systems. It is not possible to disentangle all of this complexity using statistical techniques, so we cannot accurately predict what the results would have been in England or elsewhere in the absence of the COVID-19 pandemic. That said, we can draw some cautious inferences based on observed trends across systems according to the different choices made concerning whether and how much to delay data collection, as well as whether to test the originally intended age group (the end of the fourth year of formal schooling, or year 5 in England) or the original cohort at a later point in time (i.e., the beginning of the fifth year of formal schooling).

Table 63 displays the differences in overall performance since the previous cycle for education systems that participated in both PIRLS 2016 and PIRLS 2021, grouped by their data collection choices (as originally planned, delayed by 6 months and testing at the beginning of the fifth year of formal schooling, or delayed by 12 months and testing at the end of the fourth year of formal schooling). The lack of a consistent pattern across these groups is likely a consequence of the fact that the impact of the COVID-19 pandemic differed across contexts in ways that cannot be described by the available data for this study. Nonetheless, there are some broad trends: A larger proportion of systems that collected data as originally planned showed significant decreases in overall reading performance, and a larger proportion of systems that delayed by 6 months and tested an older age group showed significant increases in overall reading performance since 2016. These results suggest that COVID-19 may have had a greater impact on reading performance outcomes in education systems that continued with data collection as originally planned. The complication of testing an older age group in systems that delayed data collection by 6 months makes it difficult to disentangle the impact of the pandemic from any effect of pupil age.

Of the 9 education systems that saw increases in their scores since previous cycles in PIRLS 2021, 7 were located in North Africa (Egypt, Morocco) or the Gulf states (Bahrain, Oman, Qatar, Saudi Arabia and the United Arab Emirates). Four of these education systems (Oman, Qatar, Morocco and the United Arab Emirates) already appeared to have upward trajectories in their PIRLS scores from 2011 to 2016. While these may be instances in which broad trends within systems continued despite the COVID-19 pandemic, this does not necessarily mean that these education systems were unaffected; we cannot know whether their scores would have been similar or perhaps even higher under different circumstances.

Table 63: Trends across 2016 and 2021 PIRLS cycles according to data collection adaptations due to the COVID-19 pandemic

Performance	Education system
Tested at the originally planned time (tested pupils at the end of the fourth grade)	Egypt (+48) Oman (+11) ** Singapore (+11) New Zealand ** Hong Kong SAR Czech Republic France Slovak Republic Belgium (French) Spain (-7) Denmark (-8) Portugal (-8) Macao SAR (-10) Italy (-11) Austria (-11) * Sweden (-12) * Bulgaria (-12) Germany (-13) Belgium (Flemish) (-14) ** Russia (-14) * Taiwan (-15) ** Poland (-16) ** Finland (-17) Netherlands (-18) * Norway (-20) Slovenia (-23) Azerbaijan (-32)
Delayed testing by 6 months (tested pupils at the beginning of the fifth grade)	Australia Belgium (French) Czech Republic England France Hong Kong SAR New Zealand Slovak Republic

Performance	Education system
Delayed testing by 12 months (tested pupils at the end of the fourth grade)	Austria (-11) Azerbaijan (-32) Belgium (Flemish) (-14) Bulgaria (-12) Denmark (-8) Finland (-17) Germany (-13) Iran (-15) Israel (-20) Italy (-11) Macao SAR (-10) Netherlands (-18) Norway (-20) Poland (-16) Portugal (-8) Russia (-14) Slovenia (-23) South Africa (-31) Spain (-7) Sweden (-12) Taiwan (-15)

Significant changes in score from PIRLS 2016 to PIRLS 2021 shown in parentheses.
A single asterisk (*) *indicates that the education system did not score significantly differently to England in PIRLS 2016. A double asterisk* (**) *indicates that the education system scored significantly higher than England in PIRLS 2016.*

Source: IEA's PIRLS 2021

While PIRLS 2021 was not designed to measure the impact of the COVID-19 pandemic on reading performance and progress, other studies have endeavoured to do so. One study found that pupils were approximately 2 months behind expected progress in reading when they returned to classrooms in Autumn 2020, and under a month behind on average by the end of term in Summer 2021 (Renaissance Learning & Education Policy Institute, 2021). The same study also found that learning losses in reading varied according to individual and local area disadvantage as well as by region. Another study by Blainey and Hannay (2021) found that at least in years 2 to 6 in England, reading results seemed to be close to what would have been expected before the COVID-19 pandemic. Evidence from Ofsted reports has indicated that primary school leaders identify reading as an area of pupil learning that was substantially affected by COVID-19 disruption (Ofsted, 2020), but this did not involve direct measurement of reading performance or progress so must be cautiously interpreted.

Taken together, these different sources paint a mixed picture of the effect of the COVID-19 pandemic on reading in primary school. Tentatively, we might speculate that on

average reading may not have been dramatically affected compared to some other school subjects and skills, but that disruptions to teaching and learning may have disproportionately affected some schools and pupils according to the particularities of individual, local, school and regional contexts.

10 PIRLS and England's educational policy context

Chapter overview

This chapter provides a discussion of the educational policy context in England. It describes the relationship between PIRLS International Achievement Benchmarks and national curriculum expectations in England. The chapter also presents a discussion about the PIRLS results in the context of national assessments of reading, as well as reading initiatives in England. Finally, it discusses the relationship between educational policies and PIRLS in other participating education systems.

10.1 Current and past policy developments in England

The results from PIRLS can provide valuable system-level insights regarding reading policy in England. However, educational policy is complex and the relationship between the results of PIRLS and policy structures or interventions should not be considered causal. The evolving nature of educational policy also means that some interventions or initiatives discussed here have not been in place for sufficient periods of time to effectively evaluate their impact. Nevertheless, PIRLS provides valuable data about the reading achievement of year 5 pupils in England that can help to understand and inform policy interventions over time.

10.1.1 National curriculum

PIRLS provides detailed information regarding specific reading competencies associated with different levels of achievement reached by pupils. This information is valuable for understanding the relationship between reading achievement in PIRLS and reading curriculum expectations specific to the context of participating education systems.

A new national curriculum was introduced in England in 2014, and this is the first PIRLS cycle where the participating pupils have been exclusively taught under the new curriculum. **Table 64** presents the core knowledge and skills in reading comprehension according to the national language and reading curriculum for key stage 1 and key stage 2 in England. Also included in this table is an indication of which of the PIRLS International Benchmarks are associated with each of the curriculum expectations. (For a more detailed overview of the International Benchmark competencies see Chapter 2). Pupils participating in PIRLS 2021 were in year 5 and are expected to have achieved the knowledge and skills for reading comprehension in key stage 1 and to be making good progress on the knowledge and skills for key stage 2. It is important to note that they are not yet expected to have achieved all the skills listed in the table.

Table 64: Key stage 1 and 2 reading comprehension skills and knowledge and their association with PIRLS International Benchmark levels

Key stage	Knowledge and skills for reading comprehension	Associated with PIRLS benchmarks
Key stage 1 (years 1-2)	Understand both the books that they can already read accurately and fluently and those that they listen to	Low
	Develop pleasure in reading, motivation to read, vocabulary, and understanding	Low & Intermediate
	Participate in discussions about books, poems, and other works that are read to them and those that they can read for themselves	Intermediate
Key stage 2 (years 3-6)	Develop and maintain positive attitudes to reading and understanding of what they read	Intermediate
	Retrieve, record, and present information from nonfiction	Intermediate & High
	Be able to discuss and evaluate how authors use language, including figurative language, considering the impact on the reader	High
	Distinguish between statements of fact and opinion	High
	Participate in discussions about books that are read to them and those they can read for themselves, building on their own and others' ideas and challenging views courteously	High & Advanced
	Explain and discuss their understanding of what they have read, including through formal presentations and debates	High & Advanced

Key stage 1 expectations can be associated with competencies in Low and Intermediate PIRLS International Benchmarks. There is an overlap of the benchmarks across key stages and a few of the competencies from the Intermediate PIRLS Benchmark are more closely related to expectations for key stage 2. Results from the 2021 cycle of PIRLS show that 97% of pupils in England reached the Low Benchmark, while 86% reached the Intermediate Benchmark. This indicates that a large majority of pupils in year 5 have achieved results that are aligned with the curriculum expectations from key stage 1 for reading comprehension.

The curriculum requirements for key stage 2 are more closely aligned to the High International Benchmark. The results from PIRLS 2021 show that 57% of participating pupils were able to reach the High Benchmark level. Some of the skills in key stage 2 are also associated with the Advanced International Benchmark, and results show that 18%

of pupils in England were able to demonstrate reading skills at the Advanced level. Year 5 pupils that participated in PIRLS 2021 have not yet finished key stage 2, and as such are not yet expected to have achieved all the skills associated with key stage 2 for reading comprehension. The results show that good progress is being made, with almost all pupils demonstrating key stage 1 reading skills, and more than half of the pupils demonstrating skills associated with key stage 2 requirements. For a more detailed discussion of the Benchmark achievement for England, see Chapter 2.

10.1.2 Reading initiatives

In recent years, there have been a number of policy interventions in England that have aimed to improve reading achievement and reading instruction in primary school. In 2010, a major drive to improve the standards of reading was launched. This drive promotes Systematic Synthetic Phonics (SSP) instruction through initiatives such as a matched funding scheme, phonics roadshows and phonics partnerships between schools and, more recently, the English Hubs Programme offering school to school support and validation of phonics programmes. The value of SSP instruction for the early stages of reading development has been discussed widely, and a thorough grounding in phonics is understood to be an integral tool for developing strong reading (Castles, Rastle & Nation, 2018; Snowling et al., 2019). The emphasis on reading instruction in England is also evident in the survey responses from PIRLS. The teachers of pupils who participated in PIRLS 2021 reported that they spend, on average, 3 and a half hours per week on instruction or activities specifically related to reading.

The value of a good grounding in phonics for reading achievement in England has been shown by researchers in England investigating the link between early grade phonics performance and later achievement in PIRLS (Double et al., 2019; Stainthorp, 2020). The prioritisation of a good grounding in phonics in the early years was clear from the questionnaire responses in England. Almost all participating pupils in England (98%) attend schools where headteachers stated that knowing letter-sound relationships first receives major emphasis in year 1 or earlier. PIRLS, however, is aimed at pupils who have already transitioned from learning to read into reading to learn and the PIRLS Reading Framework is therefore focused on later phases of reading where readers read “to learn, to participate in communities of readers in school and everyday life, and for enjoyment” (Mullis & Martin, 2021, p. 6).

Findings from PIRLS have shown a positive relationship between pupils’ enjoyment of reading and their achievement in PIRLS (see Chapter 7). In England and internationally, pupils who report that they like reading have higher average performance in PIRLS than those who report that they do not like reading.

Several interventions supporting reading for pleasure are in place in England. In 2015, an evidence-based plan for ensuring progress in reading development that aimed to

continue to focus on SSP instruction while promoting the development of mature readers was outlined (Department for Education, 2015). This plan encourages reading for pleasure through the promotion of book clubs and library membership for pupils in key stage 2. Some interventions in England focused on the promotion of reading for pleasure in primary schools – such as the English Hubs Programme (2018) and the new Reading Framework (2021) – have not been in place long enough to discuss their impact yet.

10.1.3 National assessments of reading

Year 5 pupils who participated in PIRLS 2021 have previously participated in national assessments of reading in year 1 (Phonics screening check) and at the end of key stage 1 (key stage 1 Reading). Since its implementation in 2012, the predictive value of the phonics screening check and its link to later reading achievement has been widely discussed (Carter, 2020; Double et al., 2019; Goldstein et al., 2018). The positive relationship seen between performance on the phonics screening check and PIRLS results (discussed in more detail in Chapter 5), provides support for the effectiveness of early monitoring systems.

10.1.4 Teacher professional development

A recent reform of teacher education in England has made changes to both the initial teacher education systems and teacher professional development programmes. The new structures focus on mentorship and early career support opportunities for teachers entering the field. Although not mandated, ongoing professional development for teachers in England is considered a professional duty, and 5 days per year are set aside for professional development. Almost all (>97%) of pupils' teachers in PIRLS 2021 reported that they found professional development activities such as workshops, seminars and 'access to a mentor' helpful for their ongoing professional development.

A new National Professional Qualification for Leading Literacy (NPQLL) launched in October 2022. The NPQLL will train existing teachers and leaders to become literacy experts who will drive up standards of literacy teaching in their schools and improve literacy outcomes for every child. The NPQLL programme is still in the early stages of implementation; future PIRLS cycles will be better placed to assess the potential impact of the training and development programme on improving literacy outcomes for pupils.

10.1.5 Attainment gap

Narrowing the gap in performance between high and low achieving pupils has been an ongoing area of focus in England's education ecosystem. Phonics partnership programmes (2015-2019) linked schools with proven expertise with less successful schools to help improve the quality of phonics instruction. The English Hubs programme, which has been active since 2018, is a school-to-school improvement programme that

focusses on systematic synthetic phonics, early language, and reading for pleasure. These programmes focus on improving reading skills for pupils at the lower end of the performance scale without compromising the performance of pupils at the higher end of the performance scale. Performance at the higher end (90th percentile) has remained stable across all cycles of PIRLS in England, while performance at the lower end (10th percentile) showed consistent improvement from 2001-2016 and has remained stable between 2016 and 2021 (see Chapter 4 for more detail). Overall, the PIRLS 2021 results revealed that the attainment gap in England has consistently narrowed across cycles of PIRLS. This means that outcomes for lower-performing pupils are improving while the higher-performing pupils are not compromised.

A programme of targeted funding support for schools with higher proportions of disadvantaged pupils, known as the Pupil Premium, was introduced in 2011. The purpose of the Pupil Premium is to use evidence-based methods to improve educational outcomes for disadvantaged pupils. Pupils who are eligible for FSM, or have been in the past 6 years, as well as currently or previously looked-after children are eligible for Pupil Premium. Pupils who are eligible for FSM had lower average PIRLS performance in PIRLS 2021 than their peers (see Chapter 6 for a full discussion). This is consistent with findings from the Educational Endowment Foundation (EEF) that help to guide and support the implementation of the Pupil Premium. More recently, an Accelerator Fund for English has been introduced with the aim to invest in improving reading skills as well as assisting with recovery from the pandemic (Department for Education, 2022). The full effect of both the Pupil Premium and Accelerator Fund are only expected to be evident in future cycles of PIRLS.

10.1.6 Educational policies in relation to PIRLS in other participating education systems

There is a wide range of educational policies specific to reading employed by education systems that participate in PIRLS, each with their own objectives and areas of focus. This diversity makes cross-system comparisons particularly complicated in the area of policy. Nevertheless, there are some policies and interventions common to a number of education systems participating in PIRLS that can be explored to better understand the relationship between PIRLS and educational policy more broadly.

As discussed previously in this report, a primary focus area of the reading curriculum in England has been a focus on phonics instruction in the primary school years. Several of the education systems that participate in PIRLS also report in the PIRLS 2021 Encyclopedia that they focus on phonics the early stages of reading instruction. Although there is a positive relationship seen in England between phonics performance and later PIRLS performance (see Chapter 5), this relationship is more difficult to determine across at a cross-system level. As was seen PIRLS 2016, the education systems that apply

phonics instruction in their approach include those whose average performance in PIRLS 2021 ranks near the top end of scores (e.g., Singapore) as well as some at the lower end of the rankings (e.g., South Africa).

Similar to England's phonics screening check, comparators Australia and Singapore both have screening checks that take place in the first year of primary school. In all 3 education systems, these checks aim to identify pupils who may require additional learning support in reading at an early age so that they can receive the necessary support. In Australia, their phonics screening check was implemented in an effort to improve reading outcomes (Knowles & Hillman, 2022). In Singapore, pupils that are identified as requiring additional support through their screening check in year 1, then participate in a learning support programme to build basic English literacy skills for up to 2 years (Ministry of Education, 2022). In both Australia and Singapore, the performance of pupils at the lower end of the achievement scale in PIRLS has shown some improvement over time but has mostly remained consistent.

The language and reading curricula of participating education systems are an important feature of PIRLS, which aims to be a forward-thinking and curriculum-aligned assessment. In many of the education systems that participated in PIRLS 2021, language and reading curriculums are reasonably new (introduced within the last 10 years) and/or are currently being revised (Reynolds et al., 2022). In Hong Kong, an updated curriculum for primary school was implemented in 2014, the same year as England introduced its new national curriculum. The updated curriculum in Hong Kong has a special focus in the area of Learning to Learn, and more specifically, Reading to Learn. There is considerable overlap between how PIRLS defines reading and how the focus of reading to learn in Hong Kong, where a primary focus is ensuring that reading as a means of improving lifelong learning and holistic personal development.

Reading interventions to improve reading are common among education systems participating in PIRLS 2021 (Reynolds et al., 2022). Although these vary considerably across education systems, the promotion of reading for enjoyment and increasing time and opportunity to read are frequently noted. Hong Kong, for example, promotes access to libraries through a Library-on-Wheels project that aims to being books to different communities. Programmes to encourage enjoyment from reading are also common across education systems participating in PIRLS. In Singapore, a Read@School programme promotes storytelling, games and book talks aligned with pupils' interests and in Ireland, a Drop Everything and Read (DEAR) programme has been implemented.

10.2 Concluding remarks on policy changes in England and PIRLS

The relationship between national educational policy and international large-scale assessments such as PIRLS is one of the primary areas of interest for participating education systems. The complexity and diversity of approaches both within and across education systems makes drawing substantiative conclusions about the relationship between PIRLS and policy difficult. Nevertheless, there are some indications that, overall, the lessons that can be learned from PIRLS 2021 are positive for policy changes in England. The positive relationship between the results from the Phonics screening check and future PIRLS performance suggest that the screening check can be helpful in predicting later reading ability in primary school. Furthermore, the narrowing of the attainment gap in England suggests that efforts to improve the achievement of lower-performing pupils and schools are having a positive impact. The progress of more recent changes in policy, as well as the influence of adaptations to teaching and learning policy that resulted from the COVID-19 pandemic, will need more time and research to understand fully. However, despite recent challenges, studies such as PIRLS are able to provide some evidence to support ongoing improvements to educational policy in England.

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Appendices

Appendix A: Methodology

PIRLS sampling methodology and England sample

The sample design in PIRLS is intended to provide a nationally-representative, unbiased and internationally-comparable estimate of the reading performance, attitudes and behaviours of pupils in the target population within each participating education system. The target population is defined as pupils in their fourth year of formal schooling provided their mean age at the time of testing in a particular education system is at least 9.5 years. In England, this means that the target population is year 5, as year 4 (age 8-9 years) would not meet the necessary age criterion.

Education systems transitioning to digitalPIRLS were subject to more complicated sampling considerations to accommodate the need for both computer-based and paper assessment samples to allow for linking across different modes of assessment and measurement of trends from previous assessments. This did not apply in England, where PIRLS 2021 continued with the paper-and-pencil assessment as in previous cycles.

To achieve a nationally-representative sample, a two-stage random sample design was used, first drawing a sample of schools and then drawing a sample of one or more classes within sampled schools. Classes in the sample were included intact, rather than drawing samples of pupils from within classes across a year group. The reasons for this were twofold. First, this approach would cause less disruption to regular school operations as pupils normally in a class together could be assessed together. Second, PIRLS looks at pupils' experiences of reading-related classroom instruction and curriculum, aspects that tend to be organised at the classroom level.

Pearson led on project activities relevant to sampling and data collection in England, in collaboration with the IEA and Statistics Canada. Statistics Canada provided a main sample of 169 schools and about 4,500 pupils based on a sample frame of primary schools in England stratified by type (state-funded, independent, academy) and by attainment (based on attainment at KS2 in quintiles with an extra category for independent schools for which KS2 results were not available). For each of the schools in the main sample, Statistics Canada also provided a matched replacement school with similar characteristics. Some schools were excluded from the sampling frame. Exclusion criteria were:

- Very small schools, specifically those with fewer than 9 pupils in year 5; this criterion was based on IEA's requirement that small school exclusions not exceed 2% of the sample

- Special schools
- Alternative Provision
- Pupil Referral Units

Pearson successfully recruited 153 schools from the main sample followed by 14 replacement sample schools. Two schools from the main sample and 1 replacement school withdrew after signing up, leaving 167 participating schools by the end of the recruitment window. Three more schools withdrew from participating between recruitment and testing, and an additional school dropped out during the testing period, leaving 163 schools. One additional school was removed from the sample after testing as the school returned pupil questionnaires but no assessment booklets, leaving a final analytical sample of 162 schools.

Within participating classes, all pupils in the participating classes were expected to take part in PIRLS data collection activities except for those with functional or learning disabilities and those who were non-native language speakers (according to the terminology of the IEA). Pupils classified as having EAL, for example, were not excluded by default; IEA guidelines suggested that pupils with less than a year of instruction in English should be excluded. Similarly, IEA guidance indicated that pupils with Special Educational Needs and Disabilities (SEND) should not be excluded by default due to low attainment or disciplinary issues, and that accommodations should be put in place wherever possible to allow pupils to participate. Exclusions based on SEND were to be limited to cases in which, based on the professional judgment of headteachers or other qualified school staff, a pupil could not physically perform under PIRLS testing conditions or they could not follow the general instructions of the test. These criteria led to the exclusion of 161 pupils in total, 17 with functional disabilities, 100 with learning disabilities and 44 non-native language speakers, making up 3.5% of the sample in total.

Overall, 4543 pupils were included in the sample, of which 4166 (92%) completed assessment booklets and 4106 (90%) completed pupil questionnaires. Pearson collected information on pupil absences, of which there were 437 in total. Of these, 62 pupils had left their schools permanently, 86 had parental permission denied, and 289 were absent for any other reason. Of 179 teachers in the sample, 167 (93%) returned questionnaires. School questionnaires based on head-teacher responses were completed in 146 out of 163 schools (90%). This meant that the IEA's minimum participation threshold of 85% was met across England's sample of schools, teachers and pupils.

Survey administration

A field trial was conducted in early 2020, prior to the main study. Information from the field trial helped to inform school recruitment processes as well as items included in the data collection instruments in the main study, in order to ensure that assessments and

questionnaires would collect meaningful information and that sampling and recruitment would go as smoothly as possible.

Data collection took place between mid-May and mid-July 2022, following the decision to delay data collection by 12 months from when it was originally planned in England due to the COVID-19 pandemic. An additional step taken as a consequence of the pandemic was to provide the option – not previously offered in PIRLS in England, though offered in some other education systems as standard practice – for schools to self-administer PIRLS tests and questionnaires rather than accommodating external visitors for the purposes of this research. Schools were given an opportunity to express a preference upon being recruited, and later those that initially opted to self-administer were also given 2 further opportunities to change their choice and involve a Pearson Test Administrator (TA) instead. In the final sample of 162 schools, 108 chose to self-administer, and another 54 decided to have a Pearson TA. Each school participating in the main study, whether self-administering or not, nominated a school coordinator who liaised with Pearson contacts to facilitate sampling and data collection processes and to ensure that these adhered to the international guidelines from IEA.

Test materials from the IEA, including assessment booklets and pupil, teacher and headteacher questionnaires, underwent national adaptations to ensure that the materials were appropriate for the English target population. Adaptations largely involved changing American English words and phrases to British English to ensure that they would be accessible to British pupils, and no questions were added or removed from the assessment booklets. Two curriculum experts with extensive key stage 2 experience reviewed the assessment booklets and confirmed that the content was suitable for pupils in year 5 and included appropriate coverage of the relevant national curriculum content. Pupil and teacher questionnaires did not have any national questions added, but 3 questions were added to the school (headteacher) questionnaire addressing the effect of the COVID-19 pandemic on normal school operations and the resources provided when normal school operations were disrupted. These items pertained explicitly to 2020/21, the original year during which data collection was planned, which may have caused some confusion in England given the choice to delay data collection to 2021/22 (see Chapter 9 for more on these questions).

An International Quality Assurance Program was developed by the IEA to ensure that data collection activities followed standardized procedures, and this involved visits by International and National Quality Control Monitors to 15 schools (approximately 10% of the sample) in each participating education system to observe the administration of PIRLS 2021. In England, feedback from Quality Control Monitors indicated a high level of quality of delivery on the part of test administrators and good adherence to administration procedures; this was the case both for school-based and Pearson TAs.

Data from the pupil assessments and questionnaires, teacher questionnaires and school questionnaires were sent to IEA via secure file sharing portal for upload into the IEA software CodingExpert. 22 coders and 5 coding Team Leaders were recruited by Pearson, trained in July 2022 and coded the data between late July and early August 2022. Coded, cleaned and checked data for England's sample was submitted to IEA by Pearson in early September 2022, followed by data checks on the assessment and questionnaire data by IEA. IEA returned only minor queries which were addressed by Pearson and returned with no further queries by late September 2022. Data transfers between collaborating organisations used secure file transfers and uploads to secure servers, and transfer of paper materials between Pearson and schools used a courier service throughout the study. Data protection was carefully monitored throughout the study and there were no breaches.

Data analysis

The IEA merged England's final data with that of other participating education systems into an international database. IEA's analysis of the international results is available in the *PIRLS 2021 International Results in Reading* report (Mullis et al., 2023). The international database was released to participating education systems' National Research Centres on February 2, 2023, and released publicly on June 22, 2023. This National Report is based on these data as well as linked pupil information from the NPD to contextualise the PIRLS results. The linked data from the NPD were delivered directly by secure file transfer to the OUCEA research team, and held securely on a University server.

Analysis undertaken by the OUCEA research team used the IEA's International Database (IDB) Analyzer, IBM SPSS and R software. Appropriate analytical techniques were used to account for the sample design and data structure, including pooling of results across plausible values and use of jackknife replicate weights. Not all pupils in the PIRLS sample could be matched to NPD records, and the analyses using the linked NPD-PIRLS dataset in this report are prefaced by reporting of coverage of the PIRLS sample in the matched NPD sample. In most cases the instances in which a match could not be found in the NPD was due to pupils' enrolment in independent schools not included in the NPD.

Sources of further information

For more information on the broader PIRLS sample design and implementation, instrument development, translation, quality assurance, creation of the international database and scaling methodology, please see https://pirls2021.org/methods/.

For the *PIRLS 2021 Assessment Frameworks*, please see https://pirls2021.org/frameworks/.

For the *PIRLS 2021 Encyclopedia* documenting education policy and curriculum in participating education systems, please see https://pirls2021.org/encyclopedia/.

For further information on PIRLS 2021 and the international report, please see https://www.iea.nl/studies/iea/pirls/2021.

Appendix B: Missing data from the NPD

Table 65: Missing NPD data for pupils in England's PIRLS 2021 sample

Pupil background characteristic	Number of pupils with PIRLS data but missing NPD data	Percent of pupils with PIRLS data but missing NPD data
No NPD match	265	6%
Missing ethnic group*	384	9%
Missing EAL	349	8%
Missing Ever6FSM	346	8%
Missing year 1 phonics check score	531	13%
Missing KS1 reading level	452	11%

** Ethnic group was defined as missing if no information was available for a particular pupil or if a student was listed as 'unclassified'.*

Sources: National Pupil Database (NPD) and IEA's PIRLS 2021

Appendix C: Test languages in PIRLS 2021

Table 66: Education systems testing in a single language in PIRLS 2021

Education System	Test language
Albania	Albanian
Australia	English
Austria	German
Belgium (Flemish)	Dutch
Belgium (French)	French
Brazil	Portuguese
Bulgaria	Bulgarian
Croatia	Croatian
Czech Republic	Czech
Denmark	Danish
Egypt	Arabic
England	English
France	French
Georgia	Georgian
Germany	German
Hong Kong, SAR	Chinese
Hungary	Hungarian
Iran	Persian
Ireland	English
Italy	Italian
Jordan	Arabic
Kosovo	Albanian
Montenegro	Montenegrin (Cyrillic)
Morocco	Arabic
Netherlands	Dutch
Northern Ireland	English
Poland	Polish
Portugal	Portuguese
Russia	Russian
Serbia	Serbian (Cyrillic)
Singapore	English
Slovenia	Slovenian
Sweden	Swedish

Education System	Test language
Taiwan	Chinese
Turkey	Turkish
United States	English

Source: IEA's PIRLS 2021

Table 67: Education systems testing in multiple languages in PIRLS 2021

Education System	Test languages	Percentage of pupils
Azerbaijan	**Azerbaijani**, Russian	**90%**, 10%
Bahrain	**Arabic**, English	**68%**, 32%
Canada (Alberta)	**English**, French	**98%**, 2%
Canada (British Columbia)	**English**, French	**98%**, 2%
Canada (Quebec)	**French**, English	**91%**, 9%
Cyprus	**Greek**, English	**92%**, 8%
Finland	**Finnish**, Swedish	**94%**, 6%
Israel	**Hebrew**, Arabic	**75%**, 25%
Kazakhstan	**Kazakh**, Russian	**66%**, 34%
Latvia	**Latvian**, Russian	**76%**, 24%
Lithuania	**Lithuanian**, Polish, Russian	**89%**, 6%, 6%
Macao SAR	**Chinese**, English, Portuguese	**90%**, 9%, 1%
Malta	**English**, Maltese	**75%**, 25%
New Zealand	**English**, Māori	**98%**, 2%
North Macedonia	**Macedonian**, Albanian	**66%**, 34%
Norway	**Nynorsk**, Bokmål	**92%**, 8%
Oman	**Arabic**, English	**92%**, 8%
Qatar	**English**, Arabic	**55%**, 45%
Saudi Arabia	**Arabic**, English	**95%**, 5%
Slovak Republic	**Slovak**, Hungarian	**95%**, 6%
South Africa	**English**, isiZulu, isiXhosa, Sepedi, Afrikaans, Sesotho, Setswana, Xitsonga, siSwati, Tshivenda, isiNdebele	**22%**, 20%, 15%, 10%, 9%, 8%, 8%, 3%, 2%, 2%, 1%
South Africa (Grade 6)	**English**, Afrikaans	**91%**, 9%
Spain	**Spanish**, Catalan, Basque, Galician, Valencian	**70%**, 18%, 4%, 4%, 3%

Education System	Test languages	Percentage of pupils
United Arab Emirates	**English**, Arabic	**76%**, 24%
United Arab Emirates (Abu Dhabi)	**English**, Arabic	**92%**, 8%
United Arab Emirates (Dubai)	**English**, Arabic	**88%**, 12%
Uzbekistan	**Uzbek (Latin)**, Russian, Karakalpak	**88%**, 9%, 3%

Because of rounding, some results may appear inconsistent.
Most common test language is in bold

Source: IEA's PIRLS 2021

Appendix D: Teachers' perspectives on parental involvement

Table 68: Percentage of pupils in England and comparator systems whose teachers believe that parents are involved in school activities

Education system	Very high involvement	High involvement	Medium involvement	Low involvement
England	5%	25%	40%	29%
Singapore	5%	34%	43%	18%
Hong Kong SAR	5%	26%	53%	15%
Australia	8%	21%	39%	32%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 69: Percentage of pupils in England and comparator systems whose teachers believe that parents are committed to ensuring that pupils are ready to learn

Education system	Very high commitment	High commitment	Medium commitment	Low commitment
England	5%	24%	45%	26%
Singapore	7%	29%	49%	15%
Hong Kong SAR	1%	21%	54%	24%
Australia	9%	30%	44%	18%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 70: Percentage of pupils in England and comparator systems whose teachers believe that parents have high expectations for pupil achievement

Education system	Very high expectations	High expectations	Medium expectations	Low expectations
England	11%	31%	41%	17%
Singapore	12%	50%	33%	6%
Hong Kong SAR	12%	47%	36%	6%
Australia	20%	33%	38%	9%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

Table 71: Percentage of pupils in England and comparator systems whose teachers believe that parents support the school in ensuring high pupil achievement

Education system	Very high support	High support	Medium support	Low support
England	10%	22%	52%	16%
Singapore	6%	33%	47%	13%
Hong Kong SAR	5%	36%	50%	10%
Australia	7%	30%	49%	14%

Because of rounding, some results may appear inconsistent.

Source: IEA's PIRLS 2021

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